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New derivatives of hydantoins, thiohydantoins, pyrimidinediones and thioxopyrimidinones, their preparation processes and their use as medicaments

The invention relates to new derivatives of hydantoins, thiohydantoins, pyrimidinediones and thioxopyrimidinones of general formula (I) represented below, their preparation processes and their use as medicaments. These compounds have a good affinity with certain sub-types of somatostatin receptors and therefore have useful pharmacological properties. The invention also relates to the pharmaceutical compositions containing said compounds and their use for the preparation of a medicament intended to treat pathological states or diseases in which one (or more) somatostatin receptors are involved.

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Somatostatin (SST) is a cyclic tetradecapeptide which was isolated for the first time from the hypothalamus as a substance which inhibits the growth hormone (Brazeau P. et al., Science 1973, 179, 77-79). It also operates as a neurotransmitter in the brain (Reisine T. et al., Neuroscience 1995, 67, 777-790; Reisine T. et al., Endocrinology 1995, 16, 427-442). Molecular cloning has allowed it to be shown that the bioactivity of somatostatin depends directly on a family of five receptors linked to the membrane.

The heterogeneity of the biological functions of somatostatin has led to studies which 15 try to identify the structure-activity relationships of peptide analogues on somatostatin receptors, which has led to the discovery of 5 sub-types of receptors (Yamada et al., Proc. Natl. Acad. Sci. U.S.A, 89, 251-255, 1992; Raynor, K. et al, Mol. Pharmacol., 44, 385-392, 1993). The functional roles of these receptors are currently being actively studied. The affinities with different sub-types of somatostatin receptors have been 20 associated with the treatment of the following disorders/diseases. Activation of subtypes 2 and 5 has been associated with suppression of the growth hormone (GH) and more particularly with that of adenomas secreting GH (acromegalia) and those secreting hormone TSH. Activation of sub-type 2 but not sub-type 5 has been associated with the treatment of adenomas secreting prolactin. Other indications associated with the 25 activation of sub-types of somatostatin receptors are the recurrence of stenosis, inhibition of the secretion of insulin and/or of glucagon and in particular diabetes mellitus, hyperlipidemia, insensiblity to insulin, Syndrome X, angiopathy, proliferative

retinopathy, dawn phenomenon and nephropathy; inhibition of the secretion of gastric acid and in particular peptic ulcers, enterocutaneous and pancreaticocutaneous fistulae, irritable colon syndrome, dumping syndrome, aqueous diarrhoea syndrome, diarrhoea associated with AIDS, diarrhoea induced by chemotherapy, acute or chronic pancreatitis and secretory gastrointestinal tumours; the treatment of cancer such as hepatomas; the inhibition of angiogenesis, the treatment of inflammatory disorders such as arthritis; chronic rejection of allografts; angioplasty; the prevention of bleeding of grafted vessels and gastrointestinal bleeding. The agonists of somatostatin can also be used to reduce the weight of a patient.

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Among the pathological disorders associated with somatostatin (Moreau J.P. et al., Life Sciences 1987, 40, 419; Harris A.G. et al., The European Journal of Medicine, 1993, 2, 97-105), there can be mentioned for example: acromegalia, hypophyseal adenomas, Cushing's disease, gonadotrophinomas and prolactinomas, catabolic side-effects of glucocorticoids, insulin dependent diabetes, diabetic retinopathy, diabetic nephropathy, hyperthyroidism, gigantism, endocrinic gastroenteropancreatic tumours including carcinoid syndrome, VIPoma, insulinoma, nesidioblastoma, hyperinsulinemia, glucagonoma, gastrinoma and Zollinger-Ellison's syndrome, GRFoma as well as acute bleeding of the esophageal varices, gastroesophageal reflux, gastroduodenal reflux, pancreatitis, enterocutaneous and pancreatic fistulae but also diarrhoeas, refractory diarrhoeas of acquired immunodeficiency syndrome, chronic secretary diarrhoea, diarrhoea associated with irritable bowel syndrome, disorders linked with gastrin releasing peptide, secondary pathologies with intestinal grafts, portal hypertension as well as haemorrhages of the varices in patients with cirrhosis, gastro-intestinal haemorrhage, haemorrhage of the gastroduodenal ulcer, Crohn's disease, systemic scleroses, dumping syndrome, small intestine syndrome, hypotension, scleroderma and medullar thyroid carcinoma, illnesses linked with cell hyperproliferation such as cancers and more particularly breast cancer, prostate cancer, thyroid cancer as well as pancreatic cancer and colorectal cancer, fibroses and more particularly fibrosis of the kidney, fibrosis of the liver, fibrosis of the lung, fibrosis of the skin, also fibrosis of the central nervous system as well as that of the nose and fibrosis induced by chemotherapy, and other therapeutic fields such as, for example, cephaleas including cephalea associated with hypophyseal tumours, pain, panic attacks, chemotherapy, cicatrization of wounds, renal insufficiency resulting from delayed development, obesity and delayed development linked with obesity, delayed uterine development, dysplasia of the skeleton, Noonan's syndrome, sleep apnea syndrome, Graves' disease, polycystic disease of the ovaries, pancreatic pseudocysts and ascites, leukaemia, meningioma, cancerous cachexia, inhibition of H pylori, psoriasis, as well as Alzheimer's disease. Osteoporosis can also be mentioned.

The Applicant found that the compounds of general formula (I) described hereafter have an affinity and a selectivity for the somatostatin receptors. As somatostatin and its peptide analogues often have a poor bioavailability by oral route and a low selectivity (Robinson, C., *Drugs of the Future*, 1994, 19, 992; Reubi, J.C. et al., *TIPS*, 1995, 16, 110), said compounds, non-peptide agonists or antagonists of somatostatin, can be advantageously used to treat pathological states or illnesses as presented above and in which one (or more) somatostatin receptors are involved. Preferably, said compounds can be used for the treatment of acromegalia, hypophyseal adenomas or endocrine gastroenteropancreatic tumours including carcinoid syndrome.

10 The compounds of the present invention correspond to general formula (I)

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in racemic, enantiomeric form or all combinations of these forms, in which:

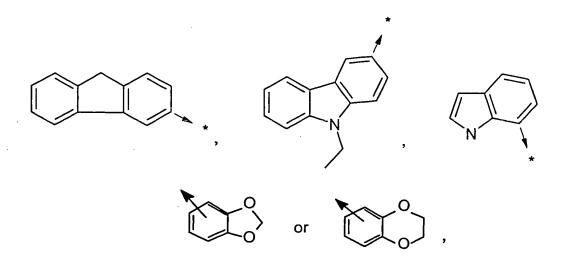
R1 represents a (C_1-C_{12}) alkyl, (C_0-C_6) alkyl-C(O)-O-Z1, (C_0-C_6) alkyl-C(O)-NH- $(CH_2)_p$ -Z2 or aryl radical optionally substituted,

Z1 represents H, a (C_1-C_6) alkyl, $-(CH_2)_p$ -aryl radical;

15 Z2 represents an amino, (C₁-C₁₂)alkylamino, (C₃-C₈)cycloalkylamino, N,N-di-(C₁-C₁₂)alkylamino, NH-C(O)-O-(CH₂)_p-phenyl, NH-C(O)-O-(CH₂)_p-(C₁-C₆)alkyl radical, an optionally substituted carbocyclic or heterocyclic aryl radical or an optionally substituted heterocyclic non aromatic radical;

R2 represents H, (C₁-C₁₂)alkyl or aryl optionally substituted;

R3 represents H or $(CH_2)_p$ -Z3; Z3 represents $(C_1$ - C_{12})alkyl, $(C_1$ - C_{12})alkenyl, $(C_3$ - C_8)cycloalkyl, -Y1- $(CH_2)_p$ -phenyl- $(X1)_n$, -S- $(C_1$ - C_{12})alkyl, S- $(C_1$ - C_{12})alkyl-S-S- $(C_1$ - C_{12})alkyl, an optionally substituted carbocyclic or heterocyclic aryl radical, and in particular one of the radicals represented below



an optionally substituted heterocyclic non aromatic radical, a bis-arylalkyl or diarylalkyl radical or also the radical

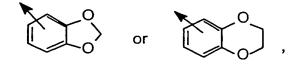
Y1 represents O, S, NH or is absent;

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R4 represents (CH₂)_n-Z4;

Z4 represents amino, (C_1-C_{12}) alkyl, (C_3-C_8) cycloalkyl, (C_1-C_{12}) alkylamino, N,N-di- (C_1-C_{12}) alkylamino, amino (C_3-C_6) cycloalkyl, amino (C_1-C_6) alkyl (C_3-C_6) cycloalkyl (C_1-C_6) alkyl, carbocyclic or heterocyclic aminoaryl, (C_1-C_{12}) alkoxy, (C_1-C_{12}) alkenyl, N-C(O)O(C_1-C_6)alkyl, an optionally substituted carbocyclic or heterocyclic aryl radical, an optionally substituted heterocyclic non aromatic radical, *bis*-arylalkyl, di-arylalkyl or one of the radicals represented below



or also Z4 represents an N(R6)(R7) radical in which R6 and R7 taken together with the nitrogen atom which they carry form together a heterocycle with 5 to 7 members;

R5 represents H, $-(CH_2)_p$ -C(O)- $(CH_2)_p$ -Z5, $-(CH_2)_p$ -Z5, $-(CH_2)_p$ -OZ5 or $-(C_0-C_6)$ alkyl-C(O)-NH- $-(CH_2)_p$ -Z5,

Z5 representing an optionally substituted radical chosen from the group constituted by the $-(C_1-C_{12})$ alkyl, benzo[b]thiophene, phenyl, naphthyl, benzo[b]furannyl, thiophene, isoxazolyl, indolyl radicals, and



it being understood that an optionally substituted radical or an optionally substituted phenyl is optionally substituted by one or more substituent, each preferably chosen independently from the group constituted by the Cl, F, Br, I, CF₃, NO₂, OH, NH₂, CN, N₃, -OCF₃, (C₁-C₁₂)alkyl, (C₁-C₁₂)alkoxy, -(CH₂)_p-phenyl-(X1)_q, -NH-CO-(C₁-C₆)alkyl, -NH-C(O)O-(C₁-C₆)alkyl, -S-(C₁-C₆)alkyl, -S-phenyl-(X1)_q, -O-(CH₂)_p-phenyl-(X1)_q, -O-(CH₂)_p-phenyl-(X1)_q, -O-(CH₂)_p-NH₂, -O-(CH₂)_p-NH-(C₁-C₆)alkyl, -O-(CH₂)_p-N-di-((C₁-C₆)alkyl) and -((C₀-C₁₂))alkyl-(X1)_q radicals;

X1, each time that it occurs, is independently chosen from the group constituted by the H, Cl, F, Br, I, CF₃, NO₂, OH, NH₂, CN, N₃, -OCF₃, (C₁-C₁₂)alkyl, (C₁-C₁₂)alkoxy, -S-(C₁-C₆)alkyl, -(CH₂)_p-amino, -(CH₂)_p-NH-(C₁-C₆)alkyl, -(CH₂)_p-N-di-((C₁-C₆)alkyl), -(CH₂)_p-phenyl and -(CH₂)_p-NH-(C₃-C₆)cycloalkyl radicals;

p each time that it occurs is independently 0 or an integer from 1 to 6;

q each time that it occurs is independently an integer from 1 to 5.

X represents O or S;

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n represents 0 or 1; and finally

when n represents 0, m represents 1, 2 or 3, and when n represents 1, m represents 0 or 1.

According to a preferred variant of the invention, the compounds of general formula (I) are such that R5 represents H.

The compounds of general formula (I) can, if appropriate, contain more than one asymmetrical centre. If this happens, the diastereomers or any mixture of diastereomers are also included in the invention. For example, when the compound of general formula (I) has two asymmetrical centres, the invention will include the compounds of general formula (I) of "R,S", "S,R", "R,R" and "S,S" configurations, as well as a mixture in whatever proportions of the latter.

In the present invention, the alkyl radicals can be linear or branched. By alkyl, unless specified otherwise, is meant a linear or branched alkyl radical containing 1 to 6 carbon atoms. By cycloalkyl, unless specified otherwise, is meant a monocyclic carbon system containing 3 to 7 carbon atoms. By alkenyl, unless specified otherwise, is meant a linear or branched alkyl radical containing 1 to 6 carbon atoms and having at least one unsaturation (double bond). By alkynyl, unless specified otherwise, is meant a linear or branched alkyl radical containing 1 to 6 carbon atoms and having at least one double unsaturation (triple bond). By carbocyclic or heterocyclic aryl, is meant a carbocyclic or heterocyclic system containing at least one aromatic ring, a system being called heterocyclic when at least one of the rings which comprise it contains a heteroatom (O, N or S). By aryl, unless specified otherwise, is meant a carbocyclic system comprising at least one aromatic ring. By haloalkyl, is meant an alkyl radical of which at least one of the hydrogen atoms (and optionally all) is replaced by a halogen atom. heterocyclic non aromatic radical, is meant a heterocyclic system containing no aromatic ring, at least one of the rings comprising said system containing at least one heteroatom (O, N or S).

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By alkylthio, alkoxy, haloalkyl, haloalkoxy, aminoalkyl, alkylamino, alkenyl, alkynyl and aralkyl radicals, is meant respectively the alkylthio, alkoxy, haloalkyl, haloalkoxy, aminoalkyl, alkylmino, alkenyl, alkynyl and aralkyl radicals the alkyl radical of which has the meaning indicated previously.

By N,N-di-(C₁-C₁₂)alkylamino radical, is meant a dialkylamino radical of which the two alkyl radicals substituting the nitrogen atom can have independently 1 to 12 carbon atoms.

By linear or branched alkyl having 1 to 6 carbon atoms, is meant in particular the methyl, ethyl, propyl, isopropyl, butyl, isobutyl, sec-butyl and tert-butyl, pentyl, 25 neopentyl, isopentyl, hexyl, isohexyl radicals. By cycloalkyl, is meant in particular the cyclopropanyl, cyclobutanyl, cyclopentanyl, cyclohexyl and cycloheptanyl radicals. By carbocyclic or heterocyclic aryl, is meant in particular the phenyl, naphthyl, pyridinyl, furannyl, pyrrolyl, thiophenyl, thiazolyl, indanyl, indolyl, imidazolyl, benzofurannyl, benzothiophenyl, phthalimidyl radicals. By carbocyclic or heterocyclic aralkyl, is meant in particular the benzyl, phenylethyl, phenylpropyl, phenylbutyl, indolylalkyl, phthalimidoalkyl radicals.

When an arrow emanates from a chemical structure, said arrow indicates the attachment point. For example:

represents the aminoethyl radical.

When an arrow is drawn through a bi- or tricyclic group, said arrow indicates that said bi- or tricyclic group can be attached by any of the available attachment points on any aromatic ring of said group. For example:

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represents a radical which is attached at any position on the benzene ring.

In particular, the compounds of general formula (I) according to the invention can be chosen such that:

R1 represents an optionally substituted aryl radical;

10 R2 represents H or an alkyl radical;

R3 represents one of the following radicals:

R4 represents one of the following radicals:

*
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NOT NOT TO

R5 represents H or an alkyl radical.

Preferably, the compounds of general formula (I) are such that:

R1 represents the phenyl radical optionally substituted by a halogen atom or a (C_1-C_{12}) alkyl, (C_1-C_{12}) alkoxy or nitro radical;

R2 and R5 represent H or alkyl;

R3 represents H or (CH₂)₂-Z3;

Z3 represents (C₁-C₁₂)alkyl, (C₃-C₈)cycloalkyl, Y1-(CH₂)_p-phenyl-(X1)_n, an optionally substituted carbocyclic or heterocyclic aryl radical, an optionally substituted heterocyclic non aromatic radical, *bis*-arylalkyl, di-arylalkyl or one of the radicals represented below

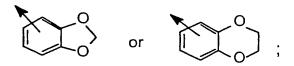
10 Y1 represents O, S, NH or is absent;

R4 represents $(CH_2)_p$ –Z4;

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Z4 represents amino, (C_3-C_8) cycloalkyl, (C_1-C_{12}) alkylamino, N,N-di- (C_1-C_{12}) alkylamino, amino (C_3-C_6) cycloalkyl, amino (C_1-C_6) alkyl (C_3-C_6) cycloalkyl (C_1-C_6) alkyl, carbocyclic or heterocyclic aminoaryl, an optionally substituted carbocyclic or heterocyclic aryl radical, an optionally substituted heterocyclic non aromatic radical, bis-arylalkyl, di-arylalkyl or one of the radicals represented below



it being understood that an optionally substituted radical or an optionally substituted phenyl is optionally substituted by one or more substituent, each preferably chosen independently from the group constituted by the Cl, F, Br, I, CF₃, NO₂, OH, NH₂, CN, N₃, -OCF₃, (C₁-C₁₂)alkyl, (C₁-C₁₂)alkoxy, -(CH₂)_p-phenyl-(X1)_q, -NH-CO-(C₁-C₆)alkyl, -S-(C₁-C₆)alkyl, -S-phenyl-(X1)_q, -O-(CH₂)_p-phenyl-(X1)_q, - (CH₂)_p-C(O)-O-(C₁-C₆)alkyl, -(CH₂)_p-C(O)-(C₁-C₆)alkyl, -O-(CH₂)_p-NH₂, -O-(CH₂)_p-NH₂, -O-(CH₂)_p-NH-(C₁-C₆)alkyl, -O-(CH₂)_p-N-di-((C₁-C₆)alkyl) and -((C₀-C₁₂))alkyl-(X1)_q radicals;

X1, each time that it occurs, is independently chosen from the group constituted by the H, Cl, F, Br, I, CF₃, NO₂, OH, NH₂, CN, N₃, -OCF₃, (C₁-C₁₂)alkyl, (C₁-C₁₂)alkoxy, -S- (C₁-C₆)alkyl, -(CH₂)_p-amino, -(CH₂)_p-NH-(C₁-C₆)alkyl, -(CH₂)_p-N-di-((C₁-C₆)alkyl), -(CH₂)_p-phenyl and -(CH₂)_p-NH-(C₃-C₆)cycloalkyl radicals;

p each time that it occurs is independently 0 or an integer from 1 to 6;

q each time that it occurs is independently an integer from 1 to 5.

X represents O or S;

n represents 0 or 1; and finally

when n represents 0, m represents 1, 2 or 3, and when n represents 1, m represents 0 or

More preferentially, the compounds of general formula (I) are such that:

R1 represents the phenyl radical optionally substituted by a halogen atom or a (C_1-C_{12}) alkyl, (C_1-C_{12}) alkoxy or nitro radical;

10 R2 and R5 represent H or alkyl;

R3 represents $(CH_2)_p$ –Z3,

Z3 representing a (C₃-C₈)cycloalkyl radical or an optionally substituted radical chosen from the phenyl, naphthyl, furannyl, thiophene, indolyl, pyrrolyl and benzothiophene radicals;

15 R4 represents $(CH_2)_p$ –Z4;

Z4 representing amino, (C_1-C_{12}) alkylamino, N,N-di- (C_1-C_{12}) alkylamino or amino (C_1-C_6) alkyl (C_1-C_6) cycloalkyl- (C_1-C_6) alkyl;

X represents S;

p each time that it occurs is independently 0 or an integer from 1 to 6;

20 m represents 0, 1 or 2; and finally

n represents 0 or 1.

Yet more preferentially, the compounds of the present invention are of the compounds:

- of general sub-formula (I)a represented below:

in which:

R'3 represents one of the radicals represented below:

and R'4 represents one of the radicals represented below:

- of general sub-formula (I)b represented below:

in which:

R'3 represents one of the radicals represented below:

and R'4 represents one of the radicals represented below:

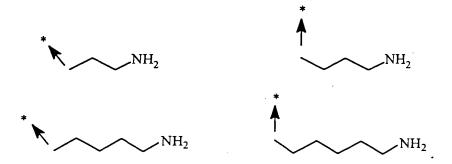
$$NH_2$$
 NH_2
 NH_2
 NH_2

- of general sub-formula (I)c represented below:

in which:

R'3 represents one of the radicals represented below:

and R'4 represents one of the radicals represented below:



The invention relates moreover to the preparation processes for the compounds of general formula (I) described previously (also applicable to the corresponding compounds of general sub-formulae (I)a, (I)b and (I)c).

The compounds of general formula (I) described previously for which n represents 0 and X represents O or S can be prepared by the reaction in an aprotic solvent of the compound of general formula (II) represented below

$$R1$$
 $R2$
 N
 $R5$
 N
 $R3$
 O
 GP
 $R3$
 O
 GP
 $R1$

in which m, R1, R2, R3 and R5 have the same meaning as in general formula (I), and the O-GP radical is a parting protective group derived from an alcohol and in particular benzyloxy, methoxy or tert-butoxy,

with an isocyanate or isothiocyanate of general formula (III)

$$R4-N=C=X$$
, (III)

in which R4 and X have the same meaning as in general formula (I),

preferably in the presence of a tertiary base for a duration of approximately 1 to 24 hours and at a temperature preferably comprised between 20 and 60 °C.

The compounds of general formula (I) described previously for which n represents 1 and X represents O or S can be prepared by the reaction in an aprotic solvent of the compound of general formula (IV) represented below

$$R1$$
 $R2$
 N
 $R5$
 N
 $R5$
 N
 $R3$
 (IV)

in which m, R1, R2, R3 and R5 have the same meaning as in general formula (I), and the O-GP radical is a parting protective group derived from an alcohol and in particular benzyloxy, methoxy or tert-butoxy,

with an isocyanate or isothiocyanate of general formula (III)

in which R4 and X have the same meaning as in general formula (I),

preferably in the presence of a tertiary base for a duration of approximately 1 to 48 hours and at a temperature preferably comprised between 20 and 70 °C.

For the above processes, the aprotic solvent is preferably polar and can in particular be
THF or dichloromethane. The tertiary base will be for example triethylamine or N,Ndiisopropylethylamine.

Moreover the invention offers new synthesis intermediates which are useful for the preparation of the compounds of general formula (I). These compounds, precursors of the compounds of general formula (II) and (IV), correspond to general formula (V):

R1
$$R2 \xrightarrow{N} N \longrightarrow O$$

$$R5 \longrightarrow M_2N \longrightarrow O$$

$$(V)$$

in which

R1, R2, R5, m and n have the same meaning as in general formula (I);

and the O-GP radical is a parting protective group derived from an alcohol and in particular benzyloxy, methoxy or tert-butoxy.

- 5 The following compounds corresponding to general formula (V) are the preferred intermediates:
 - benzyl (2S)-2-amino-3-[(4-phenyl)-1H-imidazol-2-yl]propanoate;
 - benzyl (2R)-2-amino-3-[(4-phenyl)-1H-imidazol-2-yl]propanoate;
 - benzyl (2S)-2-amino-4-[(4-phenyl)-1H-imidazol-2-yl]butanoate;
- benzyl (2R)-2-amino-4-[(4-phenyl)-1H-imidazol-2-yl]butanoate;
 - benzyl (3R)-3-amino-4-[(4-phenyl)-1H-imidazol-2-yl]propanoate;
 - benzyl (3S)-3-amino-4-[(4-phenyl)-1H-imidazol-2-yl]propanoate .

A subject of the invention is also, as medicaments, the compounds of general formulae (I), (I)a, (I)b and (I)c described previously or their pharmaceutically acceptable salts.

It also relates to the pharmaceutical compositions containing said compounds or their pharmaceutically acceptable salts, and their use for the preparation of a medicament intended to treat the pathological states or diseases in which one (or more) of the somatostatin receptors are involved.

In particular, the compounds of general formulae (I), (I)a, (I)b and (I)c described previously or their pharmaceutically acceptable salts can be used for the preparation of a medicament intended to treat the pathological states or diseases chosen from the group comprising the following pathological states or diseases: acromegalia, hypophyseal adenomas, Cushing's disease, gonadotrophinomas and prolactinomas,

catabolic side-effects of glucocorticoids, insulin dependent diabetes, diabetic retinopathy, diabetic nephropathy, syndrome X, dawn phenomena, angiopathy, angioplasty, hyperthyroidism, gigantism, endocrinic gastroenteropancreatic tumours including carcinoid syndrome, VIPoma, insulinoma, nesidioblastoma, hyperinsulinemia, glucagonoma, gastrinoma and Zollinger-Ellison's syndrome, GRFoma as well as acute bleeding of the esophageal varices, ulcers, gastroesophageal reflux, gastroduodenal reflux, pancreatitis, enterocutaneous and pancreatic fistulae but also diarrhoeas, refractory diarrhoeas of acquired immunodeficiency syndrome, chronic secretary diarrhoea, diarrhoea associated with irritable bowel syndrome, diarrhoeas induced by chemotherapy, disorders linked with gastrin releasing peptide, secondary pathologies with intestinal grafts, portal hypertension as well as haemorrhages of the varices in patients with cirrhosis, gastro-intestinal haemorrhage, haemorrhage of the gastroduodenal ulcer, bleeding of grafted vessels, Crohn's disease, systemic scleroses, dumping syndrome, small intestine syndrome, hypotension, scleroderma and medullar thyroid carcinoma, illnesses linked with cell hyperproliferation such as cancers and more particularly breast cancer, prostate cancer, thyroid cancer as well as pancreatic cancer and colorectal cancer, fibroses and more particularly fibrosis of the kidney, fibrosis of the liver, fibrosis of the lung, fibrosis of the skin, also fibrosis of the central nervous system as well as that of the nose and fibrosis induced by chemotherapy, and in other therapeutic fields, cephaleas including cephalea associated with hypophyseal tumours, pain, inflammatory disorders such as arthritis, panic attacks, chemotherapy, cicatrization of wounds, renal insufficiency resulting from delayed development, hyperlipidemia, obesity and delayed development linked with obesity, delayed uterine development, dysplasia of the skeleton, Noonan's syndrome, sleep apnea syndrome, Graves' disease, polycystic disease of the ovaries, pancreatic pseudocysts and ascites, leukaemia, meningioma, cancerous cachexia, inhibition of H pylori, psoriasis, chronic rejection of allografts as well as Alzheimer's disease and finally osteoporosis.

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Preferably, the compounds of general formulae (I), (I)a, (I)b and (I)c described previously or their pharmaceutically acceptable salts can be used for the preparation of a medicament intended to treat the pathological states or diseases chosen from the group comprising the following pathological states or diseases: acromegalia, hypophyseal adenomas or endocrinic gastroenteropancreatic tumours including carcinoid syndrome, and gastrointestinal bleeding.

By pharmaceutically acceptable salt is meant in particular addition salts of inorganic acids such as hydrochloride, sulphate, phosphate, diphosphate, hydrobromide and nitrate, or of organic acids, such as acetate, maleate, fumarate, tartarate, succinate, citrate, lactate, methanesulphonate, p-toluenesulphonate, pamoate, oxalate and stearate.

The salts formed from bases such as sodium or potassium hydroxide also fall within the scope of the present invention, when they can be used. For other examples of pharmaceutically acceptable salts, reference can be made to "Pharmaceutical salts", J. Pharm. Sci. 66:1 (1977).

- The pharmaceutical composition can be in the form of a solid, for example powders, granules, tablets, capsules, liposomes or suppositories. Appropriate solid supports can be for example calcium phosphate, magnesium stearate, talc, sugars, lactose, dextrin, starch, gelatin, cellulose, methyl cellulose, sodium carboxymethyl cellulose, polyvinylpyrrolidine and wax.
- The pharmaceutical compositions containing a compound of the invention can also be presented in the form of a liquid, for example, solutions, emulsions, suspensions or syrups. Appropriate liquid supports can be, for example, water, organic solvents such as glycerol or the glycols, as well as their mixtures, in varying proportions, in water. The suspensions contain in particular suspensions of sustained release microparticles loaded with active ingredient (in particular microparticles of polylactide-co-glycolide or PLGA cf. for example the Patents US 3,773,919, EP 52 510 or EP 58 481 or the Patent Application PCT WO 98/47489), which allow the administration of a determined daily dose over a period of several days to several weeks.

The administration of a medicament according to the invention can be done by topical, oral, parenteral route, by intramuscular injection, etc.

The administration dose envisaged for a medicament according to the invention is comprised between 0.1 mg to 10 g according to the type of active compound used.

These compounds are prepared according to the following procedures.

PREPARATION OF THE COMPOUNDS OF THE INVENTION

PREPARATION OF IMIDAZOLYL DERIVATIVES

General procedure:

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i) Cyclization in order to obtain the imidazole group:

An amino acid is converted to its cesium salt using cesium carbonate in a polar solvent such as a DMF/H₂O (1:1) or EtOH/H₂O (1:1) mixture. An ester is then obtained using an appropriate bromoketone in an aprotic polar solvent such as anhydrous DMF. The cesium bromide formed is eliminated by filtration and ammonium acetate is added in an aprotic solvent having a high boiling temperature such as xylene or toluene or in an acidic aprotic solvent such as acetic acid. The mixture is maintained under reflux using a Dean-Stark trap for 30 minutes to one hour. In the diagram directly below, PG1 is a protective group, preferably a carbamate, such as t-Boc or benzylcarbamate, and PG2 is also a protective group, preferably a benzyl group.

PG₁ N OH OH OH PG₂
$$PG_2$$
 PG_2 PG_1 N O PG_2 PG_3 PG_4 PG_2 PG_4 PG_4

ii) N-substitution on the imidazole group:

If appropriate, the N-substitution on the imidazole group is carried out by the reaction described hereafter for the compounds of general formula (I) for which R5 does not represent H.

A solution of the intermediate obtained in the preceding stage, an alkylating agent such as an -bromoketone, an -bromoester, an alkyl or aryl bromide, is heated to a temperature of 20 to 80 °C for a duration of 2 to 48 hours in the presence of an organic or inorganic base (optionally supported on a resin such as polystyrene resin), in an aprotic solvent such as THF, acetonitrile or DMF.

Preparation of benzyl (2S)-2-[(tert-butoxycarbonyl)amino]-3-(4-phenyl-1H-imidazol-2-yl)propanoate

5

A solution of Boc-L-Asp-OBn (12 g; 37.1 mmol) and cesium carbonate (6.05 g; 0.5 eq.) is stirred for approximately 30 minutes at approximately 20°C in EtOH/ H_2 O (1:1, 7 ml), then concentrated under reduced pressure at approximately 40°C.

25 ml of a solution of 2-bromoacetophenone (7.38 g; 1 eq.) in dry DMF is added to the resulting salt dissolved in 130 ml of dry DMF. The mixture is stirred for approximately 1 hour at approximately 20°C under an argon atmosphere then concentrated under reduced pressure. Ethyl acetate is added (100 ml) and the mixture filtered, CsBr being washed with ethyl acetate. The filtrate is then concentrated under reduced pressure.

A solution of the residue obtained and ammonium acetate (58 g; 20 eq.) in xylene (280 ml) is maintained under reflux for approximately 30 minutes at approximately 140°C. The excess NH₄OAc and water are eliminated using a Dean-Stark trap. The progress of the reaction is monitored by thin layer chromatography (TLC; eluent: ethyl acetate / heptane 1:1). The mixture is then taken to approximately 20°C then washed successively with water, a saturated solution of NaHCO₃ solution until a basic pH is obtained then with salt water until a neutral pH is obtained. The organic phase is then dried over Na₂SO₄ and concentrated under reduced pressure.

Purification of the resulting residue by flash chromatography on silica gel (eluent: ethyl acetate / heptane 1:1) yields the expected compound (8.2 g; 52 %).

NMR (1 H, 400 MHz, CDCl₃): 7.64-7.14 (m, 11H, arom H); 5.95 (d, 1H, NHBoc); 5.21-5.13 (AB, 2H, OCH₂Ph, J_{AB} = 12Hz); 4.73 (m, 1H, CH); 3.30 (m, 2H, CH₂); 1.42 (s, 9H, (CH₃)₃C).

MS/LC: calculated MM = 421.2; m/z = 422.2 (M+H).

The following compounds are prepared in an analogous fashion to the procedure described for benzyl (2S)-2-[(tert-butoxycarbonyl)amino]-3-(4-phenyl-1H-imidazol-2-yl)propanoate:

Deprotection stage

5

10

$$R1$$
 $R2$
 $R5$
 $R1$
 $R2$
 $R5$
 $R5$
 $R1$
 $R1$
 $R1$
 $R2$
 $R5$
 $R5$
 $R2$
 $R1$
 $R1$
 $R1$
 $R2$
 $R5$
 $R2$
 $R5$
 $R2$
 $R1$
 $R1$
 $R1$
 $R2$
 $R5$
 $R2$
 $R5$
 $R2$

General procedure: the imidazolyl derivatives protected by N-Boc are treated with an organic or inorganic acid such as trifluoroacetic acid or hydrogen chloride (aqueous or in gaseous form) in an aprotic solvent such as dichloromethane or ethyl acetate at a temperature comprised between 0°C and 25°C for 0.5 to 5 hours.

 $\label{lem:preparation} Preparation of the \ dihydrochloride of \ benzyl \ (3S)-3-(4-phenyl-1H-imidazol-2-yl)-3-amino-propanoate$

A flow of dry HCl is passed through a solution of benzyl (3S)-3-(4-phenyl-1H-imidazol-2-yl)-3-[(tert-butoxycarbonyl)amino propanoate (5 g) in ethyl acetate (120 ml) at 0°C until the TLC (eluent: 100% ethyl acetate) shows that the starting compound has

completely disappeared. The resulting mixture is then evaporated under reduced pressure. Diethylether is added to the solid obtained and the mixture is filtered. The hydrochloride is washed several times with dichloromethane then diethylether and dried under reduced pressure to produce 4.6 g of expected compound (98 % yield).

5 NMR (¹H, 400 MHz, DMSOd6): 9.21 (broad s, 2H, NH); 8.03-7.28 (m, arom. H, 11H); 5.10 (s, 1H, OCH₂Ph); 5.04 (m, 1H, CH); 3.61 (dd, 1H, CH₂, 3J = 9 Hz, 2J = 17.0 Hz); 3.39 (dd, 1H, CH₂', 3J = 5.5 Hz, 2J = 17.0 Hz).

MS/LC: Calculated MM = 321.2; m/z = 322.1 (M+H).

The following compounds are prepared in an analogous fashion to the procedure described for the dihydrochloride of benzyl (3S)-3-(4-phenyl-1H-imidazol-2-yl)-3-amino-propanoate.

N-ALKYLATION REACTION

5

10

R1

$$R2$$
 $R5$
 $R5$
 $R5$
 $R5$
 $R5$
 $R5$
 $R5$
 $R5$
 $R2$

1) Z_3CHO

2) $NaBH(OAc)_3$
 Z_3
 $R5$
 Z_3
 Z_3

General procedure: A free amine of formula (a) or (b) is treated with an aldehyde in a protic or aprotic solvent, preferably dichloromethane or tetrahydrofuran, for a duration of 1 to 15 hours at 20-50°C. The resulting imine is then reduced using a reducing agent, preferably sodium triacetoxyborohydride or sodium cyanoborohydride with or without the presence of an acid such as acetic acid, at a temperature comprised between 20 and 50°C for a duration of 0.2 to 5 hours. The *N*-alkylated compound is isolated by adding water and extraction followed by flash chromatography on silica gel or by crystallization.

Preparation of benzyl (2S)-4-(4-phenyl-1H-imidazol-2-yl)-2-[(3-thienylmethyl)amino]butanoate

Thiophene-3-carboxaldehyde (1 ml; 1 eq.) is added to a solution of benzyl (2S)-2amino-4-(4-phenyl-1H-imidazol-2-yl)butanoate in the form of a free base (3.6 g; 1 eq.) 5 in tetrahydrofuran (hereafter THF, 40 ml). The mixture is stirred for 15 hours at approximately 20°C and diluted by adding 50 ml of tetrahydrofuran. NaBH(OAc)₃ (4.73 g; 2 eq.) is then added. After 1 hour of stirring at approximately 20°C, the reaction is stopped by adding water (40 ml) and ethyl acetate is then added (100 ml). After decantation and extraction, the combined organic phases are washed with salt 10 water, dried over Na2SO4 then evaporated under reduced pressure at 40°C. Flash chromatography purification on silica gel (eluent: ethyl acetate / heptane 9:1) yields the expected compound in the form of a yellow oil (3.08 g; 66 % yield). NMR (¹H, 400 MHz, CDCl₃): 7.62-7.04 (m, 15H, arom. H, NH); 5.18 (s, 2H, OCH₂); 3.87-3.69 (AB, 2H, CH₂NH, 2J_{AB} = 13 Hz); 3.38 (dd, 1H, CHNH, 3J = 4.5 Hz, 2J = 8.5 15 Hz); 2.98 (m, 1H, CH_2CH); 2.88 (m, 1H, CH_2CH); 2.17 (m, 1H, CH_2); 1.97 (m, 1H, CH,).

MS/LC: Calculated MM = 431.2; m/z = 432.2 (M+H); m/z = 430.8 (M-H).

The following compounds (in their two enantiomer forms) are prepared in an analogous fashion to the procedure described for benzyl (2S)-4-(4-phenyl-1H-imidazol-2-yl)-2-[(3-thienylmethyl)amino]butanoate:

In the above formulae, R3 represents one of the following radicals:

PREPARATION OF HYDANTOINS AND THIOHYDANTOINS

R1

R2

N

R4-NCX

(III)

Base

R3

N

R1

R1

R1

R1

R1

R1

R2

R1

R2

R3

R4

(I)

$$X = O \text{ or } S; n = 0$$

General procedure:

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An amine of formula (II), in which m, R1, R2, R3 and R5 have the same meanings as in general formula (I) and the O-GP radical is a parting protective group derived from an alcohol and in particular benzyloxy, methoxy or tert-butoxy, is treated with an isocyanate or a isothiocyanate of general formula R4-NCX in which R4 has the same meaning as in general formula (I), in the presence or in the absence of a tertiary base such as triethylamine or N,N-diisopropylethylamine, in an aprotic solvent, preferably tetrahydrofuran or dichloromethane, at a temperature comprised between approximately 20 and 60°C and for 1 to 24 hours. The resulting hydantoin or thiohydandoin can be isolated with a yield of 60 to 95 %, either by flash chromatography on silica gel or by addition to the reaction mixture of a nucleophilic reagent carried by a polymer such as for example an aminomethylpolystyrene resin (acquired from Novabiochem) followed by filtration and evaporation of the filtrate.

When R4 represents a radical comprising a primary amino termination (for example R4 represents aminoethyl, aminopropyl, etc.), the reagent is not R4-NCX but the corresponding compound the amino group of which is protected by a suitable protective group, for example a tert-butoxycarbonyl group. A subsequent deprotection stage (carried out under standard conditions, namely an acid treatment) must therefore be carried out in order to obtain the compound of general formula (I).

Preparation of certain non-commercial isothiocyanates of general formula (III):

$$+ CS2 + R4-NH2 \longrightarrow R4-N=S$$

These compounds are prepared as follows: a primary amine of general formula R4-NH₂ is treated with a mixture of carbon disulphide and *N*-cyclohexylcarbodiimide *N*-methyl polystyrene resin, in an aprotic solvent, preferably tetrahydrofuran or dichloromethane, for a duration of 1 hour to 18 hours at 20-50°C. The resulting isothiocyanate is isolated after filtration on frit and evaporation of the filtrate.

Preparation of 6-isothiocyanato-N,N-dimethyl-1-hexanamine

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Carbon disulphide (8.3 mL, 10 eq) and a solution of *N,N*-dimethyl-1,6-hexanediamine (2g, 1 eq) in THF (10 mL) are added successively dropwise to a suspension of *N*-cyclohexylcarbodiimide *N*-methyl polystyrene resin (7.8g, 1.1 eq; acquired from Novabiochem, load 1.95 mmol/g) in anhydrous THF (120 mL). The suspension is stirred for 2 hours at approximately 20°C then filtered on frit. The filtrate is then concentrated to dryness under reduced pressure at 40°C in order to produce the expected isothiocyanate derivative (2.6g, 93% yield).

NMR ¹H, 400 MHz, CDCl₃,): 3.50 (t, 2H); 2.24 (t, 2H), 2.20 (s, 6H), 1.68 (q, 2H), 1.50-1.31 (m, 6H).

The following compounds are prepared in an analogous fashion to the procedure described for 6-isothiocyanato-N,N-dimethyl-1-hexanamine:

Preparation of (5S)-1-(1H-indol-3-ylmethyl)-3-(4-nitrophenyl)-5-[2-(4-phenyl-1H-imidazol-2-yl)ethyl]-2-thioxo-4-imidazolidinone

4-nitro-phenylisothiocyanate (43 mg; 1.2 eq.) is added to a solution of benzyl (2S)-2-[(1H-indol-3-ylmethyl)amino]-4-(4-phenyl-1H-imidazol-2-yl)butanoate (93 mg; 1 eq.) in THF (2 ml). The mixture is stirred for 2 hours at approximately 20°C then diluted with 4 ml of THF. Aminomethylpolystyrene resin (acquired from Novabiochem, load 3.2 mmol/g, 125 mg, 2 eq.) is added, then triethylamine (200 μl). The mixture is stirred for 15 hours at approximately 20°C then filtered on frit. The filtrate is concentrated to dryness under reduced pressure at 40°C (a co-evaporation with dichloromethane is necessary to eliminate the excess triethylamine). Purification of the residue by flash chromatography on silica gel (eluent: ethyl acetate/heptane 9:1) yields the expected compound (90 mg; 84 % yield).

NMR (1 H, 400 MHz, CDCl₃): 8.24-7.09 (m, 17H, arom H, NH); 5.88, 4.64 (AB, 2H, CH₂N, 2J_{AB} = 15 Hz); 3.38 (dd, 1H, CH, 3J = 3.0 Hz, 2J = 8.5 Hz); 2.92 (m, 2H, CH₂CH); 2.74 (m, 1H, CH₂); 2.24 (m, 1H, CH₂).

MS/LC: Calculated MM = 536.2; m/z = 537.1 (M+H).

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The following compounds (in their two enantiomer forms) are prepared in an analogous fashion to the procedure described for (5S)-1-(1H-indol-3-ylmethyl)-3-(4-nitrophenyl)-5-[2-(4-phenyl-1H-imidazol-2-yl)ethyl]-2-thioxo-4-imidazolidinone (apart from the final purification by flash chromatography on silica gel which is optional):

5 In the above formulae, R3 represents one of the following radicals:

and R4 represents one of the following radicals:

* NC CI Who to how the

 $\label{lem:preparation} Preparation of (5S)-1-(1H-indol-3-ylmethyl)-5-[2-(4-phenyl-1H-imidazol-2-yl)ethyl]-3-[3-(trifluoromethyl)phenyl]-2, 4-imidazolidinedione$

3-trifluoromethyl-phenylisocyanate (11 mg, 1.2 eq.) is added to a solution of benzyl (2S)-2-[(1H-indol-3-ylmethyl)amino]-4-(4-phenyl-1H-imidazol-2-yl)butanoate (23 mg, 1 eq.) in 2 ml of THF. The mixture is stirred for 2 hours at approximately 20°C then diluted with 2 ml of THF. Aminomethylpolystyrene resin (acquired from Novabiochem, load 3.2 mmol/g, 125 mg, 2 eq.) is added, then triethylamine (200 μl). The mixture is stirred for 15 hours at approximately 20°C then filtered on frit. The filtrate is then concentrated to dryness under reduced pressure at 40°C (a co-evaporation with dichloromethane is necessary to eliminate the excess triethylamine) in order to produce the expected compound (25 mg, 92% yield).

NMR (¹H, 400 MHz, CDCl₃): 7.75-6.99 (m, 17H, arom H, NH); 5.25, 4.44 (AB, 2H, CH₂N, J_{AB} = 15 Hz); 3.77 (m, 1H, CH); 2.92 (m, 1H, CH₂CH); 2.88 (m, 1H, CH₂CH); 2.72 (m, 1H, CH₂); 2.17 (m, 1H, CH₂).

15 MS/LC: Calculated MM = 543.2; m/z = 544.2 (M+H).

The following compounds (in their two enantiomer forms) are prepared in an analogous fashion to the procedure described for (5S)-1-(1H-indol-3-ylmethyl)-5-[2-(4-phenyl-1H-imidazol-2-yl)ethyl]-3-[3-(trifluoromethyl)phenyl]-2,4-imidazolidinedione:

In the above formulae, R3 represents one of the following radicals:

and R4 represents one of the following radicals:

PREPARATION OF DIHYDROPYRIMIDINE-2,4-DIONES AND 2-THIOXO-TETRAHYDRO-4-PYRIMIDINONES

R1

R2

N

R2

N

R5

N

R5

N

R5

N

R4-NCX

(III)

base

(IV)

$$X = 0 \text{ or } S; n = 1$$

General procedure:

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15

An amine of general formula (IV), in which m, R1, R2, R3 and R5 have the same meanings as in general formula (I) and the O-GP radical is a parting protective group derived from alcohol and in particular benzyloxy, methoxy or tert-butoxy, is treated with an isocyanate or isothiocyanate R4-NCX in the presence of a tertiary base such as triethylamine or N,N-diisopropylethylamine in an aprotic solvent, preferably THF or dichloromethane, at a temperature comprised between 20 and 70°C for 1 to 48 hours. The compound obtained can be isolated with a yield of 40 to 90 %, either by flash chromatography on silica gel or by addition to the reaction mixture of a nucleophilic reagent carried by a polymer such as for example an aminomethylpolystyrene resin (acquired from Novabiochem) followed by filtration and evaporation of the filtrate.

When R4 represents a radical comprising a primary amino termination (for example R4 represents aminoethyl, aminopropyl, etc.), the reagent is not R4-NCX but the corresponding compound the amino group of which is protected by a suitable protective group, for example a tert-butoxycarbonyl group. A subsequent deprotection stage (carried out under standard conditions, namely an acid treatment) must therefore be carried out in order to obtain the compound of general formula (I).

Preparation of (6S)-1-(1H-indol-3-ylmethyl)-3-propyl-6-(4-phenyl-1H-imidazol-2-yl)-2-thioxotetrahydro-4(1H)-pyrimidinone

Propylisothiocyanate (25 μl, 1.2 eq.) is added to a solution of benzyl (3S)-3-[(1H-indol-3-ylmethyl)amino]-3-(4-phenyl-1H-imidazol-2-yl)propanoate (90 mg, 1 eq.) in 2 ml of THF. The mixture is stirred for 15 hours at a temperature of approximately 40°C then

diluted with 2 ml of THF. An aminomethylpolystyrene resin (acquired from Novabiochem, load 3.2 mmol/g, 125 mg, 2 eq.) is added. The mixture is stirred for 5 hours at a temperature of approximately 20°C then filtered on frit. The filtrate is concentrated under reduced pressure at 40°C. 1 ml of THF and 1 ml of triethylamine are added to the residue. The mixture is stirred for 15 hours at a temperature of approximately 40°C then concentrated under reduced pressure. Purification by flash chromatography on silica gel (eluent: ethyl acetate / heptane 8:2) yields the expected compound (72 mg, yield 82%).

NMR (1 H, 400 MHz, CDCl₃): mixture of 2 atropisomers: 8.69-6.45 (m, 12H, H arom, NH); 6.42, 4.89 (AB, 1H, CH₂, J_{AB} = 14.5 Hz); 5.78, 5.42 (AB, 1H, CH₂, J_{AB} = 14.5 Hz); 4.99 (m, 1H, CH); 4.41-4.36 (m, 1H, CH₂); 4.20-4.11 (m, 1H, CH₂); 3.49, 2.94 (AB, 1H, CH₂CO, J_{AB} = 16 Hz); 3.28, 2.80 (AB, 1H, CH₂CO, JAB = 16 Hz); 1.52 (m, 1H, CH₂); 1.40 (m, 1H, CH₂); 0.76, 0.62 (2m, 3H, CH₃).

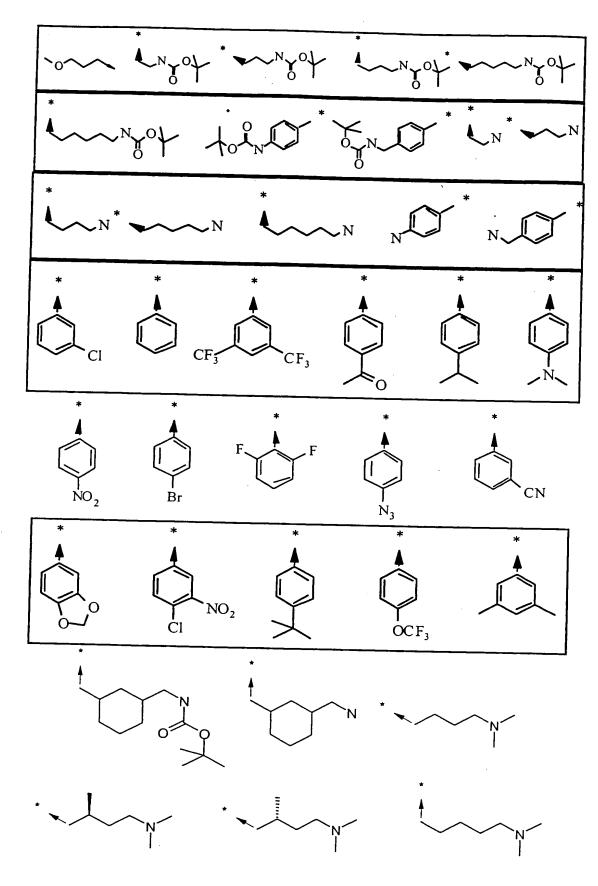
MS/LC: Calculated MM = 443.2; m/z = 444.2 (M+H).

5

The following compounds (in their two enantiomer forms) are prepared in an analogous fashion to the procedure described for (6S)-1-(1H-indol-3-ylmethyl)-3-propyl-6-(4-phenyl-1H-imidazol-2-yl)-2-thioxotetrahydro-4(1H)-pyrimidinone (except for the final purification by flash chromatography on silica gel which is optional):

In the above formula, R3 represents one of the following radicals:

and R4 represents one of the following radicals:



Preparation of (6S)-1-(1H-indol-3-ylmethyl)-3-(4-methoxyphenyl)-6-(4-phenyl-1H-imidazol-2-yl)dihydro-2.4(1H,3H)-pyrimidinedione

4-methoxyphenylisocyanate (40 μl, 1.2 eq.) is added to a solution of benzyl (3S)-3[(1H-indol-3-ylmethyl)amino]-3-(4-phenyl-1H-imidazol-2-yl)propanoate (100 mg, 1 eq.) in THF (2 ml). The mixture is stirred for 5 hours at a temperature of approximately 20°C then diluted with 2 ml of THF. An aminomethylpolystyrene resin (acquired from Novabiochem, load 3.2 mmol/g, 138 mg, 2 eq.) is added. The mixture is stirred for 3 hours at a temperature of approximately 20°C then filtered on frit. The filtrate is concentrated under reduced pressure at 40°C. 2 ml of THF and 2 ml of triethylamine are added to the residue. The mixture is taken to reflux for 24 hours then concentrated under reduced pressure. Purification of the residue by flash chromatography on silica gel (eluent: ethyl acetate / heptane 8:2) yields the expected compound (80 mg, yield 74 %).

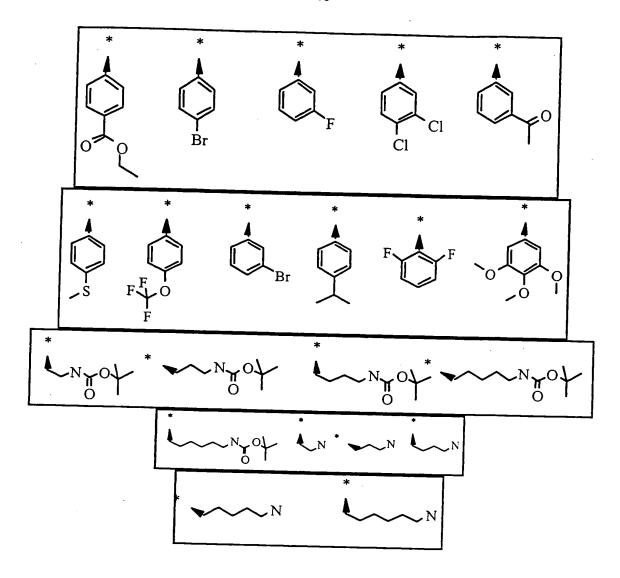
NMR (1 H, 400 MHz, CDCl₃): mixture of 2 atropisomers: 9.67-8.96 (2s, 1H, NH); 8.49 (s, 1H, NH); 5.15, 4.36 (AB, 1H, CH₂, J_{AB} = 15 Hz); 5.08, 4.69 (AB, 1H, CH₂, J_{AB} = 15 Hz); 4.67, 4.57 (2m, 1H, CH); 3.72 (s, 3H, OCH₃); 3.29-2.79 (m, 2H, CH₂CO). MS/LC: Calculated MM = 491.2; m/z = 492.3 (M+H).

The following compounds (in their two enantiomer forms) are prepared in an analogous fashion to the procedure described for (6S)-1-(1H-indol-3-ylmethyl)-3-(4-

methoxyphenyl)-6-(4-phenyl-1H-imidazol-2-yl)dihydro-2.4(1H,3H)-pyrimidinedione (except for the final purification by flash chromatography on silica gel which is optional):

In the above formula, R3 represents one of the following radicals:

5 and R4 represents one of the following radicals:



EXAMPLES

The examples prepared according to the synthesis methods described above are shown in tables below. These examples are presented to illustrate the above procedures and should in no case be considered as limiting the scope of the invention.

Analytical methods used for the characterization of the compounds

The compounds obtained have been characterized according to their retention time (rt) and to their mass spectrometry (MH+).

) Mass spectrometry

For the mass spectrometry, a single quadrupole mass spectrometer (Micromass, platform model) equipped with an *electrospray* source is used with a resolution of 0.8 Da at 50 % valley.

Calibration is carried out monthly between the masses 80 and 1000 Da using a calibration mixture of sodium and rubidium iodide in solution in an isopropanol/water mixture (1/1 Vol.).

) High performance liquid chromatography (HPLC)

For the liquid chromatography, an HPLC HP1100 system (Hewlett-Packard) including an in-line degasser, a quaternary pump, a column oven and a diode array UV detector is used.

- 15 Different elution conditions are used according to the examples:
 - Conditions (i):

10

Eluants:

Α

water + 0.04 % trifluoroacetic acid

В

acetonitrile

T(min)	A%	В%
0	100	0
1	100	0
8	30	70
10	30	70

Flow rate:

1.1 ml / min

Injection:

5 μ1

Column:

Uptisphere ODS 3µm 33*4.6 mm i.d.

Temperature:

40 °C

- Conditions (ii):

Eluants:

A

water + 0.04 % trifluoroacetic acid

В

acetonitrile

T(min)	A%	В%
0	90	10
6	15	85
10	15	85

Flow rate:

1 ml/min

Injection:

5 μ1

5 Column:

10

Uptisphere ODS 3µm 50*4.6 mm i.d.

Temperature:

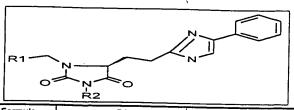
40 °C

Elution conditions (i) are used for the characterization of Examples 1 to 479, 560 to 572 and 733 to 1040. As regards conditions (ii) they are used for Examples 480 to 559, 573 to 732 and 1041 to 1234. The UV detection is carried out at a wavelength of 220 nm for all the examples.

					Analyses	
	R1	N	Z Z			
		<u> </u>				1
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
1	C29H25N5O2			89.6%	6.2	476.2
2	C30H27N5O2			91.0%	6.4	490.3
3	C30H27N5O3		-0	90.1%	6.2	506.3
4	C30H27N5O2S		s	91.0%	6.6	522.2
5	C30H24F3N5O3		FFO	83.1%	7.0	560.2
6	C32H31N5O2			84.9%	7.0	518.3
7	, C29H24BrN5O2		Br	81.9%	6.7	556.1
8	C29H24CIN5O2		CI	79.1%	6.6	510.2
9	C29H24N6O4		O ₂ N	87.3%	6.4	521.2
10	C35H37N5O2			94.1%	7.3	560.3
11	C29H23F2N5O2			96.9%	6.3	512.2
12	C30H27N5O2			96.3%	6.4	490.2
13	C31H29N5O2			92.0%	6.5	504.2
14	C29H31N5O2			85.7%	6.6	482.3
15	C25H27N5O2			94.2%	5.9	442.3

R1 N	
N N N R ₂	

	L	R2	1	ŀ		
Ex. No). Formula	R1	R2	Purity	rt (min)	[M+H]+
16	C27H29N5O2			91.7%	6.3	456.3
17	C26H25N5O2			96.6%	5.8	440.2
18	C28H31N5O2			87.2%	6.6	470.3
19	C26H27N5O2			89.1%	6.0	442.2
20	C32H31N5O5			80.5%	6.1	566.2
21	C25H22N4O2S			92.3%	5.9	443.2
22	C26H24N4O2S			90.2%	6.2	457.2
23	C26H24N4O3S			92.1%	6.0	473.2
24	C26H24N4O2S2			92.8%	6.4	489.2
25	C26H21F3N4O3S		FFO	87.7%	6.8	527.2
26	C28H28N4O2S			87.8%	6.8	485.3
27	C25H21BrN4O2S		Br	84.3%	6.5	523.1
28	C25H21CIN4O2S		CI	84.9%	6.4	477.2
29	C25H21N5O4S		O ₂ N	94.0%	6.2	488.2
30	C31H34N4O2S			97.2%	7.2	527.3



E. M.		R2				
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
31	C25H20F2N4O2S		F	96.7%	6.1	479.2
32	C26H24N4O2S			95.3%	6.2	457.2
33	C27H26N4O2S			93.0%	6.4	471.2
34	C25H28N4O2S			88.3%	6.4	449.2
35	C22H24N4O2S			90.8%	5.7	409.2
36	C23H26N4O2S			91.8%	6.1	423.2
37	C22H22N4O2S			97.9%	5.6	407.2
38	C24H28N4O2S			84.3%	6.4	437.2
39	C22H24N4O2S	(s)		87.2%	5.7	409.2
40	C28H28N4O5S			92.2%	5.9	533.2
41	C28H26N4O3			93.9%	6.1	467.2
42	C29H28N4O3			95.8%	6.3	481.3
43	C29H28N4O4	-, -		93.0%	6.1	497.3
44	C29H28N4O3S			94.5%	6.5	513.2
45	C29H25F3N4O4		F	90.4%	6.9	551.2

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R1	N
R2	

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Ex. No.	Formula	R1	R2	Purity	rt (min	[M+H]+
46	C31H32N4O3			87.7%		509.3
47	C28H25BrN4O3		Br	84.2%	6.6	547.1
48	C28H25CIN4O3		CI	86.6%	6.5	501.2
49	C28H25N5O5		O ₂ N	93.9%	6.3	512.2
50	C34H38N4O3			98.3%	7.2	551.3
51	C28H24F2N4O3		F	98.0%	6.2	503.2
52	C29H28N4O3			94.6%	6.4	481.2
53	C30H30N4O3			91.5%	6.4	495.3
54	C28H32N4O3			85.8%	6.5	473.3
55	C25H28N4O3		/ 1	89.7%	5.8	433.3
56	C26H30N4O3		<u> </u>	90.6%	6.2	447.3
57	C25H26N4O3			97.1%	5.7	431.2
58	C27H32N4O3			75.3%	6.5	461.3
59	C25H28N4O3		>	86.1%	5.9	433.3
60	C31H32N4O6			83.5%	6.0	557.2

R1	N N N N N N N N N N N N N N N N N N N

	R2				1		
Ex. No.	Formula	R1	R2		Purity	rt (min)	[M+H]+
61	C29H29N5O2				92.62%*	5.3	480.3
62	C30H31N5O2	_ Z			93.25%*	5.6	494.3
63	C30H31N5O3	2			94.39%*	5.4	510.3
64	C30H31N5O2S	2	s		95.36%*	5.8	526.3
65	C30H28F3N5O3	2-	F		89.2%	6.3	564.2
66	C32H35N5O2	2-			86.35%*	6.3	522.3
67	C29H28BrN5O2		Br		84.14%*	5.9	560.1
68	C29H28CIN5O2		CI		85.8%	5.8	514.2
69	C29H28N6O4		O ₂ N		94.4%	5.6	525.3
70	C35H41N5O2			9	5.76%*	6.8	564.3
71	C29H27F2N5O2	, z-		9	6.29%*	5.5	516.3
72	C30H31N5O2	\\		9	7.59%*	5.6	494.3
73	C31H33N5O2			9	4.87%*	5.7	508.3
74	C29H35N5O2			8	7.63%*	5.8	486.3
75	C26H31N5O2		✓ XI	87	7.69%*	5.0	446.3

·	R1		Z Z			
	0	N O R2				
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
76	C27H33N5O2			86.66%*		460.3
77	C26H29N5O2	2-		93.78%*	4.9	444.3
78	C28H35N5O2	2-		85%*	5.8	474.3
79	C26H31N5O2			87.49%*	5.0	446.3
80	C32H35N5O5			87.6%	5.3	570.3

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Ex. No.	Formula	R1	R2	Deci-tre		I
81	C28H23N5O2		K2	Purity 92%	rt (min) 6.2	[M+H]+ 462.2
82	C29H25N5O2			93%	6.5	476.2
83	C29H25N5O3			94%	6.2	492.2
84	C29H25N5O2S		s	92%	6.6	508.2
85	C29H22F3N5O3		F Fo	92%	7.0	546.2
86	C31H29N5O2			92%	7.1	504.3
87	C28H22BrN5O2		Br	92%	6.8	542.1
88	C28H22CIN5O2		CI	92%	6.7	496.2
89	C28H22N6O4		O ₂ N	82%	6.5	507.2
90	C34H35N5O2			92%	7.3	546.3
91	C28H21F2N5O2		F F	90%	6.2	498.2
92	C31H29N5O5			82%	6.2	552.2
93	C29H22F3N5O2			92%	6.9	530.2
94	C30H25N5O3			89%	6.1	504.2
95	C29H25N5O2			92%	6.4	476.2

R1 N N N N N N N N N N N N N N N N N N N
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Ex. No.	Formula	R1	R2	Burita	I at (min)	
96	C30H27N5O2		N.	Purity 93%	rt (min) 6.6	(M+H]+ 490.3
97	C25H25N5O2			95%	5.9	428.2
98	C26H27N5O2			95%	6.3	442.3
99	C25H23N5O2			95%	5.8	426.2
100	C27H29N5O2			94%	6.6	456.3
101	C24H20N4O2S			92%	5.9	429.2
102	C25H22N4O2S			91%	6.2	443.2
103	C25H22N4O3S			90%	6.0	459.2
104	C25H22N4O2S2	(s)	\s_s	87%	6.4	475.2
105	C25H19F3N4O3S		FFO	89%	6.8	513.2
106	C27H26N4O2S	(s)		89%	6.9	471.2
107	C24H19BrN4O2S		Br	91%	6.5	509.1
108	C24H19CIN4O2S	(s)	CI	90%	6.4	463.1
109	C24H19N5O4S	(s)	O ₂ N	76%	6.3	474.2
110	C30H32N4O2S			90%	7.1	513.3

O NO O R2

Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
111	C24H18F2N4O2S			82%	6.0	465.2
112	C27H26N4O5S			77%	5.8	519.2
113	C25H19F3N4O2S			89%	6.7	497.2
114	C26H22N4O3S			86%	5.8	471.2
115	C25H22N4O2S			85%	6.1	443.2
116	C26H24N4O2S			82%	6.3	457.2
117	C21H22N4O2S			84%	5.6	395.2
118	C22H24N4O2S			93%	5.9	409.2
119	C21H20N4O2S			89%	5.4	393.2
120	C23H26N4O2S			81%	6.3	423.2
121	C27H24N4O3			91%	6.0	453.2
122	C28H26N4O3			92%	6.3	467.2
123	C28H26N4O4			91%	6.0	483.3
124	C28H26N4O3S		s	88%	6.4	499.2
125	C28H23F3N4O4		F	91%	6.9	537.2

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Ex. No.	Formula	R1	T			T
126	C30H30N4O3		R2	Purity 90%	rt (min) 6.9	[M+H]+ 495.2
127	C27H23BrN4O3		Br	89%	6.6	533.1
128	C27H23CIN4O3		CI	91%	6.5	487.2
129	C27H23N5O5		O ₂ N	75%	6.4	498.2
130	C33H36N4O3			90%	7.2	537.3
131	C27H22F2N4O3		F	82%	6.1	489.2
132	C30H30N4O6		0,0	79%	6.0	543.2
133	C28H23F3N4O3		F _E F	90%	6.8	521.2
134	C29H26N4O4			85%	5.9	495.2
135	C28H26N4O3			89%	6.2	467.2
136	C29H28N4O3			89%	6.4	481.2
137	C24H26N4O3			88%	5.7	419.3
138	C25H28N4O3			90%	6.1	433.3
139	C24H24N4O3			92%	5.6	417.3
140	C26H30N4O3			87%	6.4	447.3

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Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
141	C28H27N5O2			89%	5.1	466.2
142	C29H29N5O2			89%	5.5	480.3
143	C29H29N5O3			90%	5.2	496.3
144	C29H29N5O2S	- 2-	s	86%	5.7	512.2
145	C29H26F3N5O3		F F O	87%	6.2	550.2
146	C31H33N5O2			87%	6.2	508.3
147	C28H26BrN5O2		Br	88%	5.8	546.1
148	C28H26CIN5O2	-4	CI	88%	5.7	500.2
149	C28H26N6O4	- 2	O ₂ N	74.76%*	5.6	511.2
150	C34H39N5O2			85%	6.7	550.3
151	C28H25F2N5O2	-,-	li-	81%	5.3	502.2
152	C31H33N5O5			79%	5.2	556.3
153	C29H26F3N5O2			88%	6.1	534.2
154	C30H29N5O3			85%	5.1	508.3
155	C29H29N5O2	- N		86%	5.4	480.3

R1 N O N O R2	N N N N N N N N N N N N N N N N N N N

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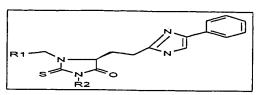
	Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
	156	C30H31N5O2	-1		86%	5.6	494.3
	157	C25H29N5O2			85%	4.8	432.3
	158	C26H31N5O2			84%	5.2	446.3
	159	C25H27N5O2			86%	4.7	430.3
·	160	C27H33N5O2			88%	5.6	460.3

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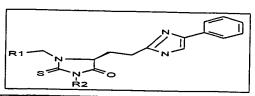
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			N.			
		R1		j.		
		S NO				
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
161	C30H27N5OS			80%	7.1	506.2
162	C30H26CIN5OS		G ci	83%	7.3	540.2
163	C30H25CI2N5OS			81%	7.7	574.1
164	C31H27N5O3S			81%	7.0	550.2
165	C30H26FN5OS		10	82%	7.1	524.3
166	C31H29N5OS			81%	7.3	520.3
167	C31H28CIN5OS			83%	7.6	554.2
168	C33H33N5O3S			80%	7.0	580.3
169	C32H31N5OS			78%	7.4	534.3
170	C28H25N5O2S		(°)	85%	6.7	496.3
171	C28H29N5O2S		°	81%	6.6	500.3
172	C28H29N5OS			71%	7.1	484.3
173	C29H31N5OS			61%	7.3	498.3
174	C30H33N5OS			64%	7.6	512.3
175	C29H32N6O2S			84%	5.0	529.3

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R1 N	
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		R2] [
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
176	C30H34N6O2S			86%	5.0	543.3
177	C30H36N6OS			83%	5.2	529.3
178	C26H27N5O2S		0	82%	6.3	474.3
179	C27H29N5O2S		0	80%	6.4	488.3
180	C27H29N5OS			74%	7.0	472.3
181	C26H24N4OS2			77%	6.9	473.2
182	C26H23CIN4OS2	(s)	C CI	78%	7.1	507.2
183	C26H22Cl2N4OS2		i i	84%	7.6	541.1
184	C27H24N4O3S2			80%	6.9	517.2
185	C26H23FN4OS2	(s)		75%	7.0	491.2
186	C27H26N4OS2			80%	7.1	487.2
187	C27H25CIN4OS2	(s)		85%	7.4	521.2
188	C29H30N4O3S2	(s)	9	87%	6.8	547.2
189	C28H28N4OS2			77%	7.3	501.2
190	C24H22N4O2S2		(°)	86%	6.5	463.2



F	T	R2				
Ex. No.	Formula	R1	R2	Purity	rt (min)	(M+H)+
191	C24H26N4O2S2		C°>	58.9% +19.6%	6.4	467.2
192	C24H26N4OS2			75%	6.9	451.2
193	C25H28N4OS2			77%	7.2	465.2
194	C26H30N4OS2		5	76%	7.5	479.3
195	C25H29N5O2S2			81%	4.8	496.3
196	C26H31N5O2S2	(s)		82%	4.9	510.3
197	C26H33N5OS2		\	71%	5.0	496.3
198	C22H24N4O2S2			81%	6.1	441.2
199	C23H26N4O2S2		0	78%	6.2	455.2
200	C23H26N4OS2			79%	6.8	551.2
201	C29H28N4O2S			80%	7.0	497.3
202	C29H27CIN4O2S			81%	7.2	643.2
203	C29H26Cl2N4O2S			86%	7.6	677.2
204	C30H28N4O4S			82%	7.0	653.2
205 ,	C29H27FN4O2S			72%	7.1	627.2



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Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
206	C30H30N4O2S			83%	7.2	511.3
207	C30H29CIN4O2S			87%	7.5	657.2
208	C32H34N4O4S			87%	6.9	571.3
209	C31H32N4O2S	-0		83%	7.4	637.3
210	C27H26N4O3S		(°)	87%	6.6	599.2
211	C27H30N4O3S		C°>	59% +20%	6.5+6.6	491.2
212	C27H30N4O2S		Ŷ.	81%	7.0	475.5
213	C28H32N4O2S			82%	7.2	601.2
214	C29H34N4O2S			83%	7.5	615.3
215	C28H33N5O3S			86%	5.0	520.3
216	C29H35N5O3S			86%	5.0	646.3
217	C29H37N5O2S			78%	5.1	632.3
218	C25H28N4O3S		0	87%	6.2	577.2
219	C26H30N4O3S		0	80%	6.4	591.3
220	C26H30N4O2S	\.\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		85%	6.9	575.2

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Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
221	C30H31N5OS			77%	6.5	510.3
222	C30H30CIN5OS			66%	6.8	544.3
223	C30H29Cl2N5OS			69%	7.3	690.2
224	C31H31N5O3S			75%	6.4	666.3
225	C30H30FN5OS	2-		52%	6.6	528.5
226	C31H33N5OS	~~		82%	6.7	636.3
227	C31H32CIN5OS	2-		85%	7.1	670.3
228	C33H37N5O3S			82%	6.4	696.3
229	C32H35N5OS	_2_		66%	7.0	650.3
230	C28H29N5O2S	7	C°/	77%	6.1	612.2
231	C28H33N5O2S -	_ N	°	26%+48	5.8+5.9	616.3
232	C28H33N5OS	_ r_		76%	6.4	600.3
233	C29H35N5OS			78%	6.7	614.3
234	C30H37N5OS	_ r_	5	77%	4.6	645.3
235	C29H36N6O2S			85%	4.6	659.4

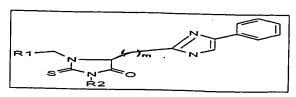
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Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
236	C30H38N6O2S	_n		84%	4.8	532.3
237	C30H40N6OS			36%	5.5	590.3
238	C26H31N5O2S		0	79%	5.7	492.3
239	C27H33N5O2S	- P	0	69%	6.3	588.3
240	C27H33N5OS			78%	6.3	476.3

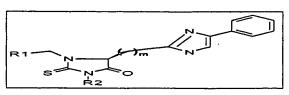
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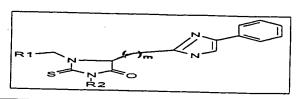
Ex. No.	Formula	m	R1	R2	Purity	rt (min)	[M+H]+
241	C29H25N5OS	2			93%	6.7	492.2
242	C31H27N5O2S	2			87%	6.6	534.2
243	C35H37N5OS	2			68%	7.9	576.3
244	C32H31N5OS	2			88%	7.5	534.2
245	C29H23F2N5OS	2		F	92%	6.9	528.2
246	C29H24FN5OS	2		F	92%	6.8	510.2
247	C29H22Cl3N5OS	2		CI CI	82%	7.6	594.1
248	C29H23CI2N5OS	2		ci Ci	86%	7.5	560.1
249	C29H22Br3N5OS	2		Br	76%	7.8	725.9
250	C31H29N5OS	2			47%	7.1	520.2
251	C31H23F6N5OS	2			88%	7.8	628.2
252	C30H24F3N5OS	2			90%	7.3	560.2
253	C31H29N5O3S	2		6	86%	6.9	552.2
254	C30H27N5O2S	2			93%	6.8	522.2
255	C30H27N5OS2	2			88%	7.1	538.2



Ex. No.	Formula	m	R1	R2	Purity	rt (min)	[M+H]+
256	C29H24N6O3S	2		0,N	92%	6.9	537.2
257	C29H24N8OS	2		No	92%	7.1	533.2
258	C31H30N6OS	2			67%	6.7	268.2
259	C30H24N6OS	2		No.	82%	6.7	517.2
260	C36H31N5O2S	2			86%	7.6	598.2
261	C29H29N5OS	2) 		78%	6.1	248.7
262	C31H31N5O2S	2			65%	6.0	269.7
263	C35H41N5OS	2		T-:	53%	7.5	290.8
264	C32H35N5OS	2			82%	7.0	269.8
265	C29H27F2N5OS	2		F	79%	6.4	266.7
266	C29H28FN5OS	2			73%	6.2	257.7
267	C29H26Cl3N5OS	2		C C C C	87%	7.2	299.6
268	C29H27CI2N5OS	2		CI	70%	7.1	282.6
269	C29H26Br3N5QS	2		Br Br	78%	7.3	365.5
270	C31H33N5OS	2	-N-		3%	6.6	262.7



Ex. No.	Formula	m	R1	R2	Purity	rt (min)	PARALITA
EX. NO.	Formula	m	KI TO THE STATE OF	K2	Punty	rt (min)	[M+H]+
271	C31H27F6N5OS	2	~~		39%	7.5	316.8
272	C30H28F3N5OS	2			64%	6.9	282.7
273	C31H33N5O3S	2		6	78%	6.3	278.7
274	C30H31N5O2S	2			45%	6.2	263.7
275	C30H31N5OS2	2			66%	6.5	271.7
276	C29H28N6O3S	2		0.7	67%	6.4	271.2
277	C29H28N8OS	2	2-	N	62%	6.5	269.2
278	C31H34N6OS	2	2-		37%	6.1	270.2
279	C30H28N6OS	2		NO.	49%	6.1	261.3
280	C36H35N5O2S	2			73%	7.2	301.8
281	C24H20N4OS2	1			89%	6.6	445.1
282	C26H22N4O2S2	1	(s)		88%	6.6	487.2
283	C30H32N4OS2	1		5	86%	7.9	529.2
284	C27H26N4OS2	1			96%	7.5	487.2
285	C24H18F2N4OS2	1	(s)	F	93%	6.7	481.1

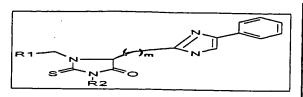


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Ex. No.	Formula	m	R1	R2	Purity	rt (min)	[M+H]+
286	C24H19FN4OS2	1			90%	6.8	463.1
287	C24H17Cl3N4OS2	1	(s)	GI CI	97%	7.5	547.0
288	C24H18Cl2N4OS2	1		C: -	90%	7.8	513.1
289	C24H17Br3N4OS2	1		ar ar	92%	7.7	678.9
290	C26H24N4OS2	1			87%	7.0	473.2
291	C26H18F6N4OS2	1		F F F	91%	8.2	581.1
292	C25H19F3N4OS2	1			87%	7.5	513.1
293	C26H24N4O3S2	1		6	95%	6.8	505.2
294	C25H22N4O2S2	1			92%	6.7	475.1
295	C25H22N4OS3	1	(s)		89%	7.1	491.1
296	C24H19N5O3S2	1		O ₂ N	88%	7.0	490.1
297	C24H19N7OS2	1			90%	7.1	486.2
298	C26H25N5OS2	1			86%	6.6	244.7
299	C25H19N5OS2	1		NO	89%	6.8	470.1
300	C31H26N4O2S2	1			88%	7.7	551.2

Ex. No.	Formula	m	R1	R2	Purity	rt (min)	[M+H]+
301	C27H24N4O2S	1			92%	6.7	469.2
302	C29H26N4O3S	1			91%	6.7	511.2
303	C33H36N4O2S	1			89%	8.0	553.3
304	C30H30N4O2S	1			95%	7.6	511.2
305	C27H22F2N4O2S	1		-	95%	6.8	505.2
306	C27H23FN4O2S	1		F	93%	6.9	487.2
307	C27H21Cl3N4O2S	1		0 0	93%	7.6	571.1
308	C27H22Cl2N4O2S	1		CI	85%	7.9	537.1
309	C27H21Br3N4O2S	1		Br	93%	7.8	702.9
310	C29H28N4O2S	1			86%	7.1	497.2
311	C29H22F6N4O2S	1			93%	8.3	605.2
312	C28H23F3N4O2S	1			93%	7.5	537.1
313	C29H28N4O4S	1		6	96%	6.9	529.2
314	C28H26N4O3S	1			97%	6.8	499.2
315	C28H26N4O2S2	1			84%	7.2	515.2

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Ex. No.	Formula	m	R1	R2	Purity	rt (min)	[M+H]+
316	C27H23N5O4S	1		02N	88%	7.1	514.2
317	C27H23N7O2S	1		~ S	94%	7.2	510.2
318	C29H29N5O2S	1			89%	6.7	256.7
319	C28H23N5O2S	1		20	90%	6.8	494.2
320	C34H30N4O3S	1			89%	7.7	575.2

C28H30N6O2S

C29H32N6O2S

R1 N O	N N N N N N N N N N N N N N N N N N N

Analyses

					Analyses	
		R1 N O R2	Z Z			
Ex. No.	Formula	R1	R2	Purity	rt (min)	(M+H)+
321	C29H25N5OS			91	7.2	492.2
322	C29H24CIN5OS			91	7.5	526.2
323	C29H23Cl2N5OS		J.	91	7.9	560.1
324	C30H25N5O3S			92	7.0	536.2
325	C29H24FN5OS			93	7.3	510.2
326	C30H27N5OS			92	7.4	506.2
327	C30H26CIN5OS		90	91	7.8	540.2
328	C32H31N5O3S		91	90	7.1	566.2
329	C31H29N5OS			91	7.6	520.2
330	C27H23N5O2S			92	6.8	482.2
331	C27H27N5O2S		C°>	35+51	6.64+6.76	486.2
332	C27H27N5OS			90	7.2	470.2
333	C28H29N5OS			89	7.4	484.3
334	C29H31N5OS			90	7.7	498.3

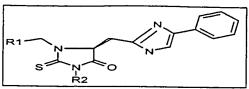
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265.3

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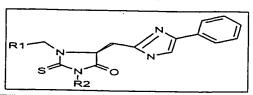
Ex. No.	Formula	R1	RZ:	Puriki	rt (min)	[M+H]+
337	C29H34N6OS			85	5.3	258.3
338	C25H25N5O2S		0	92	6.4	460.2
339	C26H27N5O2S		0	92	6.5	474.2
340	C26H27N5OS			91	7.1	458.2
341	C25H22N4OS2			90	7.0	459.2
342	C25H21CIN4OS2		6	89	7.4	493.1
343	C25H20Cl2N4OS2		J ₀	92	7.7	527.1
344	C26H22N4O3S2			88	6.9	503.2
345	C25H21FN4OS2			91	7.1	477.2
346	C26H24N4OS2			89	7.3	473.2
347	C26H23CIN4OS2		4	91	7.7	507.1
348	C28H28N4O3S2			88	6.9	533.2
349	C27H26N4OS2			85	7.5	487.2
350	C23H20N4O2S2			93	6.6	449.1
351	C23H24N4O2S2			36+50	6.34+6.46	453.2
352	C23H24N4OS2		Î	87	7.0	437.2

Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
353	C24H26N4OS2			84	7.3	451.2
354	C25H28N4OS2		5	86	7.5	465.2
355	C24H27N5O2S2			91	5.0	241.7
356	C25H29N5O2S2			88	5.0	248.8
357	C25H31N5OS2			61	5.1	241.8
358	C21H22N4O2S2		0	88	6.1	427.1
359	C22H24N4O2S2		0	87	6.3	441.1
360	C22H24N4OS2			84	6.9	425.2
361	C28H26N4O2S			89	7.1	483.2
362	C28H25CIN4O2S		e i	89	7.5	517.2
363	C28H24Cl2N4O2S		i	91	7.8	551.1
364	C29H26N4O4S			89	7.0	527.2
365	C28H25FN4O2S			95	7.2	501.2
366	C29H28N4O2S		Î	90	7.3	497.2
367	C29H27CIN4O2S			89	7.7	531.2
368	C31H32N4O4S			90	7.0	557.2

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R1 N	
R2	

Ex. No.	Formula	R1	R2	District	rt (min)	[M+H]+
369	C30H30N4O2S			91	7.5	511.2
370	C26H24N4O3S		C'>	92	6.7	473.2
371	C26H28N4O3S		C°>	39+45	6.44+6.56	477.2
372	C26H28N4O2S			89	7.1	461.2
373	C27H30N4O2S			90	7.3	475.2
374	C28H32N4O2S			90	7.6	489.3
375	C27H31N5O3S			93	5.1	253.7
376	C28H33N5O3S			90	5.1	260.8
377	C28H35N5O2S			73	5.3	253.8
378	C24H26N4O3S			91	6.2	451.2
379	C25H28N4O3S		0	91	6.4	465.2
380	C25H28N4O2S			90	7.0	449.2
381	C29H29N5OS			85	6.4	248.7
382	C29H28CIN5OS	_h_	CI	85	6.9	265.7
383	C29H27Cl2N5OS	-,-	Ę, ci	84	7.3	282.6
384	C30H29N5O3S	~~		85	6.3	270.7



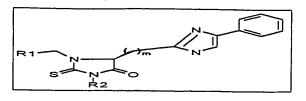
Ex. No:	Formula	R1	R2	Purity	rt Imin	IM+H1+
385	C29H28FN5OS			88	6.5	257.7
386	C30H31N5OS	-1-		84	6.7	255.6
387	C30H30CIN5OS			87	7.2	272.7
388	C32H35N5O3S			82	6.4	285.8
389	C31H33N5OS			81	6.9	262.7
390	C27H27N5O2S	2-		89	5.9	243.7
391	C27H31N5O2S			43+43	5.68+5.86	245.7
392	C27H31N5OS	-2-		83	6.4	237.7
393	C28H33N5OS			83	6.7	244.7
394	C29H35N5OS			85	7.0	251.7
395	C28H34N6O2S			87	4.6	259.8
396	C29H36N6O2S			84	4.6	267.2
397	C25H29N5O2S			74	5.4	232.7
398	C26H31N5O2S	7	0	83	5.6	239.7
399	C26H31N5OS			87	6.3	231.8

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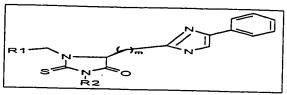
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Analyses

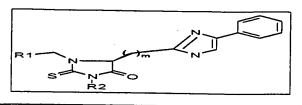
R2					1		
Ex. No.	Formula	m	R1	R2	Purity	rt (min)	[M+H]+
400	C30H34N6O3S	2		- 10 O T O T O T O T O T O T O T O T O T O	83%	7.8	559.2
401	C31H36N6O3S	2		~~~~~	82%	7.9	573.2
402	C32H38N6O3S	2			82%	8.0	587.3
403	C33H40N6O3S	2		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	81%	8.3	601.3
404	C34H42N6O3S	2		; ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	80%	8.5	615.3
405	C26H31N5O3S2	2			81%	7.6	526.2
406	C27H33N5O3S2	2		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	83%	7.8	540.2
407	C28H35N5O3S2	2		· ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	88%	7.9	554.2
408	C29H37N5O3S2	2		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	86%	8.2	568.2
409	C30H39N5O3S2	2		, , , , , , , , , , , , , , , , , , ,	86%	8.4	582.3
410	C29H35N5O4S	2		· ~~~	87%	7.7	550.3
411	C30H37N5O4S	2		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	87%	7.9	564.3
412	C31H39N5O4S	2			92%	8.0	578.3
413	C32H41N5O4S	2		·~~,	89%	8.3	592.3
414	C33H43N5O4S	2	-,-	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	88%	8.5	606.3



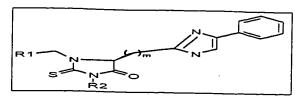
Ex. No.	Formula	m	R1	R2	Purity	rt (min)	[M+H]+
415	C30H38N6O3S	2	~~	- N-0+	83%	7.0	563.3
416	C31H40N6O3S	2		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	85%	7.2	577.3
417	C32H42N6O3S	2		, NAO+	88%	7.4	591.3
418	C33H44N6O3S	2		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	88%	7.7	303.3
419	C34H46N6O3S	2	2-	[88%	7.9	310.4
420	C29H32N6O3S	2		- ~ ~ ~	78%	7.9	545.2
421	C30H34N6O3S	2		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	81%	8.0	559.2
422	C31H36N6O3S	2			84%	8.1	573.3
423	C32H38N6O3S	2		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	82%	8.3	587.3
424	C33H40N6O3S	2		· N Y O Y	86%	8.5	601.3
425	C25H29N5O3S2	2		, , , o , ,	80%	7.7	512.2
426	C26H31N5O3S2	2			82%	7.8	526.2
427	C27H33N5O3S2	2		0 0 0 0	87%	7.9	540.2
428	C28H35N5O3S2	2		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	86%	8.2	554.2
429	C29H37N5O3S2	2		~~~~~~	84%	8.4	568.2



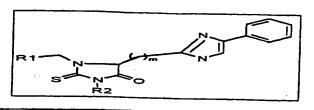
Ex. No.	Formula	m	R1	R2	Purity	rt (min)	F80.133
430	C28H33N5O4S	2		, n , o +	86%	7.8	[M+H]+ 536.3
431	C29H35N5O4S	2			85%	7.9	550.3
432	C30H37N5O4S	2		[92%	8.0	564.3
433	C31H39N5O4S	2		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	90%	8.2	578.3
434	C32H41N5O4S	2			90%	8.5	592.3
435	C29H36N6O3S	2			80%	6.9	549.3
436	C30H38N6O3S	2		~ ~ ~ ° ~ ° ~ ° ~ ° ~ ° ~ ° ~ ° ~ ° ~ °	78%	7.1	563.3
437	C31H40N6O3S	2		[84%	7.3	577.3
438	C32H42N6O3S	2		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	83%	7.5	296.3
439	C33H44N6O3S	2	-2	·	85%	7.8	303.3
440	C25H26N6OS	1		2	76%	5.4	459.2
441	C26H28N6OS	1			61%	5.4	473.3
442	C27H30N6OS	1		2	75%	5.6	244.2
443	C28H32N6OS	1		N N	32%	5.7	251.1
444	C29H34N6OS	1		, N	59%	5,9	258.3



Ex. No.	Formula	m	R1	R2	Purity	rt (min)	[M+H]+
445	C21H23N5OS2	1		2	78%	5.1	426.2
446	C22H25N5OS2	1		N	79%	5.2	440.2
447	C23H27N5OS2	1		, N	84%	5.4	227.6
448	C24H29N5OS2	1		N N	84%	5.5	234.7
449	C25H31N5OS2	1		~ N	83%	5.7	241.7
450	C24H27N5O2S	1		Z	88%	5.3	450.2
451	C25H29N5O2S	1		Z	96%	5.4	464.2
452	C26H31N5O2S	1		× × ×	90%	5.6	239.7
453	C27H33N5O2S	1	-,	`N	90%	5.7	246.7
454	C28H35N5O2S	1		· N	91%	5.9	253.7
455	C25H30N6OS	1		<u>A</u> Z	84%	4.8	232.2
456	C26H32N6OS	1		N N	89%	4.9	238.8
457	C27H34N6OS	1		× × ×	86%	5.0	246.1
458	C28H36N6OS	1		NN	93%	5.2	252.9
459	C29H38N6OS	1		, N	93%	5.4	260.1



Ex. No.	Formula	m	R1	R2	Purity	rt (min)	[M+H]+
460	C24H24N6OS	1		, N	68%	5.6	445.2
461	C25H26N6OS	1		N N	55%	5.5	459.2
462	C26H28N6OS	1		Ž N	55%	5.6	473.3
463	C27H30N6OS	1		N N	48%	5.7	487.3
464	C28H32N6OS	1		, N	44%	5.9	501.2
465	C20H21N5OS2	1		2	84%	5.3	412.1
466	C21H23N5OS2	1	(s)	N	86%	5.2	426.2
467	C22H25N5OS2	1		Å N	90%	5.3	440.2
468	C23H27N5OS2	1		`N	79%	5.5	227.7
469	C24H29N5OS2	1		, N	91%	5.7	234.8
470	C23H25N5O2S	1		2	92%	5.5	436.2
471	C24H27N5O2S	1		N N	88%	5.4	450.2
472	C25H29N5O2S	1	-,	, N	93%	5.5	464.3
473	C26H31N5O2S	1		N	92%	5.6	478.3
474	C27H33N5O2S	1		, N	95%	5.8	246.7



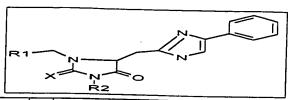
Ex. No.	Formula	m	R1	R2	Purity	rt (min)	[M+H]+
475	C24H28N6OS	,	-1	Ž	87%	4.9	224.7
476	C25H30N6OS	1		N	80%	4.8	231.9
477	C26H32N6OS	1		÷ N	84%	4.9	238.9
478	C27H34N6OS	1		~~~~N	90%	5.0	245.7
479	CZ8H36N6OS	1		, N	91%	5.2	505.3

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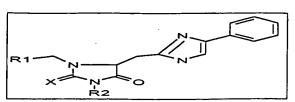
						Analyses	
	R1	×	Z-R2				
Ex. No.	Formula	X	R1	R2	Purity	rt (min)	[M+H]+
480	C30H34N6O3S	s	(8)		86%	5.4	559.2
481	C31H36N6O3S	s	(8)	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	88%	5.5	573.2
482	C32H38N6O3S	s	(8)	[~~~~~	88%	5.5	587.3
483	C33H40N6O3S	s		~~~N~0+	89%	5.7	601.3
484	C34H42N6O3S	s		; ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	91%	5.8	615.3
485	C35H36N6O3S	s			91%	5.6	621.3
486	C31H34N6O4S	ø		~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	56%	5.6	587.2
487	C32H36N6O4S	S			73%	5.6	601.2
488	C33H38N6O4S	Ø		, ~ , ~ o +	79%	5.7	615.3
489	C34H40N6O4S	s		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	71%	5.9	629.3
490	C35H42N6O4S	s		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	81%	6.0	643.3
491	C36H36N6O4S	s	(5)		60%	5.8	649.3
492	C30H34N6O3S	s	, i ii		83%	5.4	559.2
493	C31H36N6O3S	s	(R)	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	87%	5.5	573.2
494	C32H38N6O3S	s	, (g)	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	87%	5.5	587.3



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Ex. No	. Formula	×	R1	R2	Puri	ty rt (min) [M+H]+
495	C33H40N6O3S	s	(R)	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	87%	5.7	601.3
496	C34H42N6O3S	s	(R)	i ngot	88%	5.8	615.3
497	C35H36N6O3S	s	(R)	- Q	89%	5.6	621.3
498	C31H34N6O4S	s	(F)	[* N T 0 +	71%	5.6	587.2
499	C32H36N6O4S	s	(8)	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	45%	5.6	601.2
500	C33H38N6O4S	s	(R)	, , , , , , , , , , , , , , , , , , ,	75%	5.7	615.3
501	C34H40N6O4S	s		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	68%	5.9	629.3
502	C35H42N6O4S	s	270	·~~,4°+	76%	6.0	643.3
503	C36H36N6O4S	s	(F)	- C - C - C - C - C - C - C - C - C - C	55%	5.8	649.3
504	C30H34N6O4	0	(\$)	· NTO+	88%	4.9	543.3
505	C31H36N6O4	0	(8)	~~~~~~\\	88%	5.0	557.3
506	C32H38N6O4	0	(5)		85%	5.0	571.3
507	C33H40N6O4	0	(9)	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	86%	5.2	585.3
508	C31H34N6O5	٥	(5)	-n-10+	79%	4.9	571.2
509	C32H36N6O5	0	(3)	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	56%	5.0	585.3

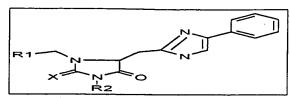
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	R2				ļ	, ·	
Ex. No.	Formula	X	R1	R2	Purity	rt (min)	[M+H]+
510	C33H38N6O5	٥	(°)	[~~~~~	77%	5.1	599.3
511	C34H40N6O5	0	(5)	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	74%	5.2	613.3
512	C30H34N6O4	o		- N - O +	90%	4.9	543.3
513	C31H36N6O4	0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	90%	5.0	557.3
514	C32H38N6O4	0	(R)	" ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	89%	5.0	571.3
515	C33H40N6O4	0		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	91%	5.2	585.3
516	C31H34N6O5	0	(6)	· ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	76%	4.9	571.2
517	C32H36N6O5	0		~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	81%	5.0	585.3
518	C33H38N6O5	0	(7)	, , , , , , , , , , , , , , , , , , ,	74%	5.1	599.3
5 1,9	C34H40N6O5	0	(4)	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	75%	5.2	613.3
520	C25H26N6OS	s	(s)	2	93%	6.8	459.2
521	C26H28N6OS	s	(s)	, , , , , , , , , , , , , , , , , , ,	93%	6.6	473.2
522	C27H30N6OS	s	(s)	Z	90%	6.7	487.2
523	C28H32N6OS	s	(s)	N N	92%	6.8	501.2
524	C29H34N6OS	s	(s)	, N	92.%	6.9	515.2



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Ev No	Formula	X	P4	l P2	D!-	(m) (m)	fan de la constantina
Ex. No.	Formula	^	R1	R2	Purity	rt (min)	[M+H]+
525	C30H28N6OS	s	(\$)	Z	89%	6.8	521.2
526	C26H26N6O2S	s	(5)	Z Z	63%	7.1	487.2
527	C27H28N6O2S	s	(5)	N	87%	6.8	501.2
528	C28H30N6O2S	s	(s)	, <u>, , , , , , , , , , , , , , , , , , </u>	85%	6.9	515.2
529	C29H32N6O2S	s	(5)	N N	79%	7.0	529.2
530	C30H34N6O2S	s		, N	91%	7.2	543.2
531	C31H28N6O2S	s		,	80%	7.1	549.2
532	C25H26N6OS	s	Z g	2	91%	6.8	459.2
533	C26H28N6OS	ø	i œ	N N	89%	6.6	473.2
534	C27H30N6OS	ø		2	93%	6.7	487.2
535	C28H32N6OS	s	(E)		91%	6.8	501.2
536	C29H34N6OS	S	Z ()	·	91%	6.9	515.2
537	C30H28N6OS	s	3	\[\frac{1}{\infty}\]	87%	6.8	521.2
538	C26H26N6O2S	ø		2	90%	7.0	487.2
539	C27H28N6O2S	Ø		N N	61%	6.8	501.2

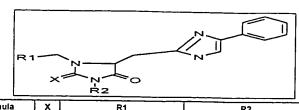


Ex. No.	Formula	Х	R1	R2	Purity	rt (min)	[M+H]+
540	C28H30N6O2S	s		, N	87%	6.9	515.2
541	C29H32N6O2S	s	(°)	N	83%	7.0	529.2
542	C30H34N6O2S	s		i N	93%	7.2	543.2
543	C31H28N6O2S	s		7	76%	7.1	549.2
544	C25H26N6O2	0	(s)	Ž Z	91%	6.1	443.2
545	C26H28N6O2	0	(\$)	z	90%	6.1	457.2
546	C27H30N6O2	0	(5)	2	87%	6.1	471.2
547	C28H32N6O2	0	Z (8)	, , , , , , , , , , , , , , , , , , ,	88%	6.2	485.2
548	C26H26N6O3	0	(8)	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	93%	6.2	471.2
549	C27H28N6O3	0		, \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	91%	6.1	485.2
550	C28H30N6O3	0	(3)	Z Z	81%	6.2	499.2
551	C29H32N6O3	0		~N	82%	6.3	513.2
552	C25H26N6O2	0		2	91%	6.1	443.2
553	C26H28N6O2	o	(R)	× × ×	91%	6.1	· 457.2
554	C27H30N6O2	0	Z (E)	Z	89%	6.1	471.2

	R1						
Ex. No.	Formula	X	R1	R2	Purity	rt (min)	[M+H]+
555	C28H32N6O2	0	(R)	N N	91%	6.1	485.2
556	C26H26N6O3	0	(A)	4 2	93%	6.2	471.2
557	C27H28N6O3	0		N N	95%	6.1	485.2
558	C28H30N6O3	0	(%)	2	85%	6.2	499.2
559	C29H32N6O3	0			85%	6.3	513.2

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			•		<u></u>	Analyses	
	R1		N O R2				
Ex. No.	Formula	x	R1	R2	Purity	rt (min)	[M+H]+
560	C24H24N6OS	s	(R)	1	84%	3.6	445.2
561	C26H28N6OS	5	(R)	, N	92%	3.5	473.3
562	C27H30N6OS	s	(R)	N	83%	3.6	487.3
563	C28H32N6OS	s	(R)	z	88%	3.7	501.3
564	C29H26N6O\$	s	(E)	2	59%	3.7	507.2
565	C24H24N6O2	0	(R)	2	87%	3.2	429.2
566	C25H26N6O2	0	ê z	× × ×	92%	3.1	443.3
567	C26H28N6O2	0	Z (g)	, z	97%	3.1	457.3
568	C27H30N6O2	0	€ E	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	90%	3.1	471.3
569	C24H24N6O2	0	(5) Z	2	91%	3.1	429.2
570	C25H26N6O2	0		z	97%	3.1	443.3

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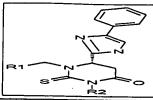


Ex. No.	Formula	Х	R1	R2	Purity	rt (min)	[M+H]+
571	C26H28N6O2	0	(3)	, N	95%	3.1	457.3
572	C27H30N6O2	0	(8)	N	95%	3.2	471.3

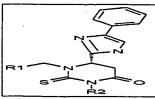
				<u></u>	Analyses	
		R1 Z	2-27			
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
573	C29H25N5OS			93%	6.7	492.2
574	C29H24CIN5OS		CI	93%	7.2	526.2
575	C29H23Cl2N5OS		Gi Gi	93%	7.6	560.1
576	C30H27N5OS			94%	7.0	506.2
577	C29H24FN5OS			95%	6.9	510.3
578	C30H27N5OS			90%	6.9	506.3
579	C30H26CIN5OS			92%	7.4	540.2
580	C32H31N5O3S			88%	6.4	566.3
581	C31H29N5OS			87%	7.1	520.2
582	C27H23N5O2S			93%	6.2	482.2
583	C27H27N5O2S		°,	38+45%	5.6+5.71	486.3
584	C28H30N6O2S			87%	4.6	515.3
585	C29H32N6O2S			84%	4.5	529.3
586	C29H34N6OS			89%	4.7	515.3
587	C25H25N5O2S		0	90%	5.18m	460.3
		•				

RI	77
<u> </u>	S Z-R

Ex. No.	Formula	R1	R2	Durit.	1-4::	1
588	C26H27N5O2S		0	Purity 87%	rt (min) 5.6	[M+H]+ 474.3
589	C25H22N4OS2		5	89%	6.7	459.2
590	C25H21CIN4OS2		CI	87%	7.2	493.2
591	C25H20Cl2N4OS2			90%	7.6	527.1
592	C26H24N4OS2			83%	7.0	473.2
593	C25H21FN4OS2			88%	6.9	477.2
594	C26H24N4OS2			80%	7.0	473.2
595	C26H23CIN4OS2			79%	7.4	507.2
596	C28H28N4O3S2			82%	6.4	533.2
597	C27H26N4OS2			79%	7.2	487.2
598	C23H20N4O2S2		(°)	80%	6.2	449.2
599	C23H24N4O2S2		C°>	31+32%	5.7+5.86	453.2
600	C24H27N5O2S2			80%	4.3	241.7
601	C25H29N5O2S2			81%	4.3	248.8
602	C25H31N5OS2		2	81%	4.5	482.3



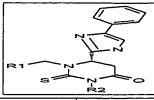
- Ev 11-	For		R2			
Ex. No.	Formula	R1	R2	Purity	rt.(min)	[M+H]+
603	C21H22N4O2S2		0	79%	5.6	427.1
604	C22H24N4O2S2		0	78%	5.9	441.2
605	C28H26N4O2S			89%	6.8	483.2
606	C28H25CIN4O2S		G c'	90%	7.2	517.2
607	C28H24CI2N4O2S		di.	91%	7.7	551.1
608	C29H28N4O2S			88%	7.0	497.3
609	C28H25FN4O2S			89%	- 6.9	501.2
610	C29H28N4O2S			87%	7.0	497.3
611	C29H27CIN4O2S			90%	7.5	531.2
612	C31H32N4O4S			91%	6.5	557.2
613	C30H30N4O2S			87%	7.2	511.3
614	C26H24N4O3S		(°)	89%	6.3	473.2
615	C26H28N4O3S		C°>	39+43%	5.7+5.85	477.2
616	C27H31N5O3S			34%	4.5	506.3
617	C28H33N5O3S			79%	4.4	520.3



			R2	•		
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
618	C28H35N5O2S			76%	4.6	506.3
619	C24H26N4O3S		0	85%	5.7	451.2
620	C25H28N4O3S		0^	84%	5.9	465.2
621	C29H29N5OS			89%	5.9	248.8
622	C29H28CIN5OS		- ci	89%	6.4	265.7
623	C29H27Cl2N5OS		i i	93%	6.9	282.7
624	C30H31N5OS			90%	6.2	255.8
625	C29H28FN5OS			92%	6.1	257.8
626	C30H31N5OS			87%	6.2	255.8
627	C30H30CIN5OS			90%	6.8	272.7
628	°C32H35N5O3S			87%	5.6	285.8
629	C31H33N5OS			88%	6.4	262.8
630	C27H27N5O2S		(°)	89%	5.4	243.7
631	C27H31N5O2S		(°)	31+37%	5.26+5.33	245.6
632	C28H34N6O2S			79%	3.7	260.3

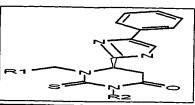
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R1 Z-R2	Lo

	· · · · · · · · · · · · · · · · · · ·		R2			
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
633	C29H36N6O2S	- N		77%	3.7	267.3
634	C29H38N6OS		N	78%	3.9	260.2
635	C25H29N5O2S	-	0~	80%	4.9	232.7
636	C26H31N5O2S		0	79%	5.0	239.7
637	C28H23F3N4O2S	F. Company	5	88%	7.4	537.2
638	C28H22CIF3N4O2S	F F O	C C	90%	7.8	571.1
639	C28H21Cl2F3N4O2S	F C	i	92%	8.3	605.1
640	C29H25F3N4O2S	F F O		89%	7.6	551.2
641	C28H22F4N4O2S	F F		89%	7.5	555.2
642	C29H25F3N4O2S	F. Co		88%	7.7	551.2
643	C29H24CIF3N4O2S	F CO		90%	8.1	585.1
644	C31H29F3N4O4S	F O	9	92%	7.2	611.2
645	C30H27F3N4O2S	F F O		86%	7.8	565.2
646	C26H21F3N4O3S	F F O	(°)	88%	7.0	527.2
647	C26H25F3N4O3S	F F O	(°)	44+42%	6.59+6.7	531.2



Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
648	C27H28F3N5O3S	F C		81%	5.0	280.8
649	C28H30F3N5O3S	F F O		82%	5.0	287.8
650	C28H32F3N5O2S	F. Company		86%	5.2	280.8
651	C24H23F3N4O3S	F CO	0	90%	6.6	505.2
652	C25H25F3N4O3S	F. Lo	0^	88%	6.8	519.2°

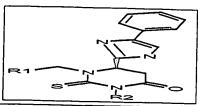
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					7			
					73			
			R7 —	77				
				S	772			
Ex. No.	Formula		R1		R2	Purity	rt (min)	[M+H]+
653 C2	9H32N6O3S					88%	6.4	545.3
654 C3	0H34N6O3S				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	90%	6.3	559.3
655 C3	1H36N6O3S					89%	6.3	573.3
656 C3:	2H38N6O3S					91%	6.5	587.3
657 C33	3H40N6O3S					91%	6.8	601.3
658 C25	H29N5O3S2	[Z =	, M		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	78%	6.7	512.3
659 C26	H31N5O3S2		T.		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	87%	6.5	526.3
660 C27I	H33N5O3S2	∠ s	Z.		, N = 0	86%	6.6	540.3
661 C28	H35N5O3S2		Y		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	84%	6.8	554.3
662 C29i	137N5O3S2	Z _s	1		:	83%	7.0	568.3
663 C28	H33N5O4S	/0			, " L o +	83%	6.7	536.3
664 C29	H35N5O4S				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	88%	6.6	550.3
665 C30	H37N5O4S	,_				84%	6.6	564.3
666 C31	H39N5O4S	,_			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	86%	6.8	578.3
667 C32I	H41N5O4S	,			, N 0 +	86%	7.0	592.3



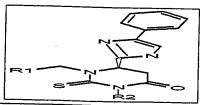
		<u> </u>	R2			
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
668	C29H36N6O3S		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	82%	5.8	549.3
669	C30H38N6O3S		~~~~~	80%	5.7	563.3
670	C31H40N6O3S	_ P	[84%	5.8	577.3
671	C32H42N6O3S	N N N N N N N N N N N N N N N N N N N	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	84%	6.0	591.4
672	C33H44N6O3S		·~~,	84%	6.3	605.4
673	C28H30F3N5O4S	F CO	·	82%	7.5	590.3
674	C29H32F3N5O4S		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	81%	7.3	604.3
675	C30H34F3N5O4S	F F O	, , , , , , , , , , , , , , , , , , ,	84%	7.4	618.3
676	C31H36F3N5O4S	F F O	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	86%	7.5	632.3
677	C32H38F3N5O4S	F F O	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	88%	7.7	646.3
678	C29H34N6O4S		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	81%	5.8	563.3
679	C30H36N6O4S	i, C	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	81%	5.8	577.3
680	C31H38N6O4S	i, O	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	82%	5.8	591.3
681	C32H40N6O4S	i, O	·~~**	82%	6.0	605.3
682	C33H42N6O4S	i, O	·	83%	6.2	619.4

	777
RI	27.0
<u> </u>	R2

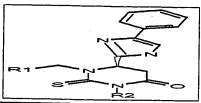
			R ₂	ł		
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
683	C27H30N6O5S		[77%	6.9	551.3
684	C28H32N6O5S		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	75%	6.8	565.3
685	C29H34N6O5S	- NO 3	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	81%	6.9	579.3
686	C30H36N6O5S		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	82%	7.0	593.3
687	C31H38N6O5S	-20"	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	82%	7.3	607.3
688	C27H37N5O3S		[-~~~	77%	7.5	512.3
689	C28H39N5O3S		-~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	71%	7.3	526.4
690	C29H41N5O3S		[-~~~~	76%	7.3	540.3
691	C30H43N5O3S		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	74%	7.5	554.4
692	C31H45N5O3S		[·~~***********************************	74%	7.7	568.4
693	C24H24N6OS			47%	4.2	445.3
694	C25H26N6OS		N N	45%	3.9	459.3
695	C26H28N6OS		N	52%	4.0	473.3
696	C27H30N6OS		N N	43%	4.1	487.3
697	C28H32N6OS		N	38%	4.3	501.3



			R2	- 1		
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
698	C20H21N5OS2	(s)	Ā Z	78%	4.1	412.2
699	C21H23N5OS2	(s)	N N	81%	4.0	426.3
700	C22H25N5OS2	(s)	, N	84%	4.1	440.2
701	C23H27N5OS2	(s)	N N	86%	4.2	454.3
702	C24H29N5OS2		, v	85%	4.3	468.3
703	C23H25N5O2S		* N	82%	4.2	436.3
704	C24H27N5O2S		~ N	84%	4.1	450.3
705	C25H29N5O2S		, N	88%	4.2	464.3
706	C26H31N5O2S		N N	88%	4.3	478.3
707	C27H33N5O2S		·	87%	4.4	492.3
708	C24H28N6OS			80%	3.5	449.3
709	C25H30N6OS	2	N	83%	3.4	436.3
710	C26H32N6OS	- N-	, , , , , , , , , , , , , , , , , , ,	84%	3.5	477.3
711	C27H34N6OS		`N	84%	3.6	491.3
712	C28H36N6OS		× × ×	85%	3.8	505.3

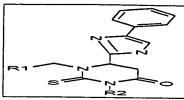


Ex. No.	Formula		R2	<u> </u>		-,
	Fornitia	R1	R2	Purity	rt (min)	[M+H]+
713	C23H22F3N5O2S	F. Co	A N	83%	4.8	490.3
714	C24H24F3N5O2S	F F O	N	84%	4.8	504.2
715	C25H26F3N5O2S	F F O	A N	88%	4.8	518.2
716	C26H28F3N5O2S	F CO	N	91%	4.9	532.2
717	C27H30F3N5O2S	F F	i N	90%	5.0	546.2
718	C24H26N6O2S			70%	3.6	463.3
719	C25H28N6O2S		N N	82%	3.5	477.3
720	C26H30N6O2S		, N	83%	3.5	491.3
721	C27H32N6O2S		`N	89%	3.7	505.3
722	C28H34N6O2S		, N	89%	3.8	519.3
723	C22H22N6O3S	10,	<u>^</u>	81%	4.3	451.2
724	C23H24N6O3S	NO,	, N	80%	4.3	465.2
725	C24H26N6O3S		, N	89%	4.3	479.2
726	C25H28N6O3S	NO.	N N	86%	4.4	493.3
727	C26H30N6O3S	70,	, N	86%	4.5	507.3



Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
728	C22H29N5OS			79%	4.8	412.3
729	C23H31N5OS		N N	75%	4.6	426.3
730	C24H33N5OS		2	78%	4.6	440.3
731	C25H35N5OS		`N	78%	4.7	454.3
732	C26H37N5OS		, N	83.8%	5.0	468.2

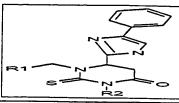
					Analyses	S
		R1	7777			
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
733	C28H24N6OS			45%	4.7	493.2
734	C29H26N6OS			57%	4.2	507.3
735	C24H21N5OS2			69%	4.7	460.2
736	C25H23N5OS2			77%	4.2	474.2
737	C27H25N5O2S			73%	4.8	484.3
738	C28H27N5O2S			76%	4.3	497.3
739	C28H28N6OS	-p		67%	3.9	497.3
740	C29H30N6OS			62%	3.6	511.3
741	C27H22F3N5O2S	F F O		61%	5.7	538.2
742	C28H24F3N5O2S	F F O		75%	4.9	552.2
743	C28H26N6O2S	Ĵ _N		57%	4.0	511.2
744	C29H28N6O2S	Î _N		60%	3.7	525.3
745	C26H22N6O3S	20%		70%	5.0	499.2
746	C27H24N6O3S	70,		65%	4.4	513.2
747	C26H29N5OS			78%	5.4	460.3
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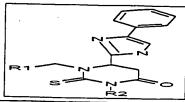
R2			ŀ			
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
748	C27H31N5OS			80%	4.7	474.3
749	C34H34N6O3S		- I	86%	6.6	593.3
750	C33H32N6O3S		100	82%	6.5	607.3
751	C30H31N5O3S2	(s)		77%	6.7	560.2
752	C29H29N5O3S2			77%	6.7	574.2
753	C33H35N5O4S			81%	6.8	584.3
754	C32H33N5O4S	-0		76%	6.7	598.3
755	C34H38N6O3S			77%	5.9	597.3
756	C33H36N6O3S		1. O. J.	74%	5.8	611.3
757	C33H32F3N5O4S	F F O		76%	7.4	638.3
758	C32H30F3N5O4S	- L. D). 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,	74%	7.3	652.3
759	C34H36N6O4S	i, ,	, B	78%	6.1	611.3
760	C33H34N6O4S		100	76%	6.0	625.3
761	C32H32N6O5S	20,	→ • ₽ • • • • • • • • • • • • • • • • •	74%	6.9	599.2
762	C31H30N6O5S	20,		69%	6.8	613.3

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R1 Z	
	Z- R2

E. No.			<u>R2</u>			
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
763	C32H39N5O3S		- <u>-</u>	78%	7.3	560.3
764	C31H37N5O3S		12.	74%	7.5	574.3
765	C31H34N6O4S	(5)		76%	6.9	587.2
766	C32H36N6O4S	(3)	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	86%	6.8	601.3
767	C33H38N6O4S	(3)		81%	6.8	615.3
768	C34H40N6O4S	(3)	N 0 1	84%	7.0	629.3
769	C35H42N6O4S	(5)	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	78%	7.2	643.4
770	C36H36N6O4S	(8)		83%	6.8	649.3
771	C31H34N6O4S	(5)	[81%	6.9	587.2
772	C32H36N6O4S	(R)	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	76%	6.8	601.3
773	C33H38N6O4S	(F)	, ~ , ~ , ~ , ~ , ~ , ~ , ~ , ~ , ~ , ~	82%	6.8	615.3
774	C34H40N6O4S		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	84%	7.0	629.3
775	C35H42N6O4S	O (A)	, ~ , ~ , ~ , ~ , ~ , ~ , ~ , ~ , ~ , ~	73%	7.2	643.3
776	C36H36N6O4S	(R)	· 6×	71%	6.8	649.3
777	C26H26N6O2S	(3)	2	84%	4.4	487.3



E. 41-	T ====+		R2		-	·
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
778	C27H28N6O2S	(9)	N N	85%	4.4	501.3
779	C28H30N6O2S	(s)	, N	65%	4.4	515.3
780	C29H32N6O2S	(5)	N N	75%	4.6	529.3
781	C30H34N6O2S	3	i N	84%	4.7	543.3
782	C31H28N6O2S	(3)	2	82%	4.5	549.3
783	C26H26N6O2S	(4)	Ž 7	87%	4.4	487.3
784	C27H28N6O2S	(A)	N	87%	4.4	501.3
785	C28H30N6O2S	(F)	, x	83%	4.4	515.3
786	C29H32N6O2S		N N	91%	4.5	529.3
787	C30H34N6O2S	E E	i N	84%	4.7	543.3
788	C31H28N6O2S	(#)		79%	4.5	549.3
789	C24H24N6OS	(8)	^ 7	42%	4.3	445.3
790	C25H26N6OS	(s)	N	72%	4.1	459.3
791	C26H28N6OS	(s)	Å	87%	4.1	473.4
792	C27H30N6OS	(S)	N N	88%	4.3	487.4



En No	T		R2		<u> </u>	
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
793	C28H32N6OS	(5)	i N	92%	4.4	501.4
794	C29H26N6OS	(S)		78%	4.3	507.3
795	C24H24N6OS	(R)	Ž Z	46%	4.3	445.3
796	C25H26N6OS	(R)	N	71%	4.1	459.3
797	C26H28N6OS	(R)	A N	93%	4.1	473.4
798	C27H30N6OS		N N	94%	4.3	487.4
799	C28H32N6OS	(F)	i N	86%	4.5	501.4
800	C29H26N6OS	(g)	2	77%		507.3

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		R1 N				
Ex. No	o. Formula	<u></u>	R2			
	J. Fornidia	R1	R2	Purity	rt (min)	[M+H]
801	C30H30N4OS			96%	7.7	495.3
802	C30H29CIN4OS		CI	97%	8.1	529.3
803	C30H28Cl2N4OS		Ū,	99%	8.6	563.2
804	C31H32N4OS			95%	7.9	509.3
805	C30H29FN4OS			96%	7.8	513.3
806	C31H32N4OS			93%	7.9	509.3
807	C31H31CIN4OS		G _i	95%	8.4	543.3
808	C33H36N4O3S			93%	7.4	569.3
809	C32H34N4OS			94%	8.1	523.3
810	C28H28N4O2S	*		96%	7.2	485.3
811	C28H32N4O2S		0	37+44%	6.7+6.84	489.3
812	C29H35N5O2S			88%	5.3	518.3
813	C30H37N5O2S			94%	5.3	532.4
814	C30H39N5OS		$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	89%	5.4	518.4
815	C26H30N4O2S		0	92%	6.7	463.3

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R1	~~	
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r =		,	R2		_	
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
816	C27H32N4O2S		0	91%	6.9	477.3
817	C29H27N5O2S			93%	6.0	510.3
818	C29H26CIN5O2S		CI	87%	6.5	544.2
819	C29H25Cl2N5O2S		Ū,	74%	6.9	578.2
820	C30H29N5O2S			94%	6.2	524.3
821	C29H26FN5O2S			94%	6.2	528.3
822	C30H29N5O2S			93%	6.3	524.3
823	C30H28CIN5O2S			93%	6.7	558.2
824	C32H33N5O4S			91%	5.7	584.3
825	C31H31N5O2S			89%	6.5	538.3
826	C27H25N5O3S			90%	5.5	500.3
827	C27H29N5O3S		°;~	27%+24	4,99+5,1	504.3
828	C28H32N6O3S			85%	3.9	533.3
829	C29H34N6O3S			87%	3.9	547.3
830	C29H36N6O2S			88%	4.1	533.3

			R2	1		
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
831	C25H27N5O3S		0	92%	4.9	478.3
832	C26H29N5O3S		0	93%	5.1	492.3
833	C27H23N5O3S	NO		93%	7.0	498.3
834	C27H22CIN5O3S	NO,	CI	85%	7.4	532.2
835	C27H21Cl2N5O3S	NOz	Ci	88%	7.8	566.1
836	C28H25N5O3S	NO ₃		90%	7.3	512.3
837	C27H22FN5O3S	NO ₂		88%	7.1	516.2
838	C28H25N5O3S	NO ₂		90%	7.3	512.3
839	C28H24CIN5O3S	NO	Î.	91%	7.8	546.2
840	C30H29N5O5S	NO ₂		92%	6.8	572.2
841	C29H27N5O3S	NO ₂		94%	7.5	526.3
842	C25H21N5O4S	NO ₂	(°)	89%	6.6	488.2
843	C25H25N5O4S	NO ₂	C°>	46%+46	6.24+6.4	492.3
844	C26H28N6O4S	NO ₃		82%	4.6	521.3
845	C27H30N6O4S	NOz		84%	4.6	535.3

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	i		
Ex. No. Formula R1 R2	Puri	ty rt (min) [M+H]+
846 C27H32N6O3S	76%	4.8	521.3
847 C23H23N5O4S	90%	6.1	466.2
848 C24H25N5O4S 0	90%	6.3	480.3
849 C24H21N5OS2 S	87%	6.1	460.2
850 C24H20CIN5OS2 S	53%	6.6	494.1
851 C24H19Cl2N5OS2 S	85%	7.0	528.0
852 C25H23N5OS2 S	79%	6.2	474.1
853 C24H20FN5OS2 S	76%	6.2	478.1
854 C25H23N5OS2 S	74%	6.4	474.1
855 C25H22CIN5OS2 S	82%	6.9	508.1
856 C27H27N5O3S2 S	73%	5.8	534.1
857 C26H25N5OS2 S	74%	6.6	488.1
858 C22H19N5O2S2 S	77%	5.5	450.1
859 C22H23N5O2S2 S	23+25%	5.2+5.33	454.1
860 C23H26N6O2S2 S	78%	3.9	483.2

			17.3			
		R1	7-20 R2			
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
861	C24H28N6O2S2	[s		68%	3.9	497.2
862	C24H30N6OS2	[s		59%	4.1	483.2
863	C20H21N5O2S2	[s	0	68%	5.0	428.1
864	C21H23N5O2S2	[s	0^	65%	5.3	442.1
865	C27H30N4OS			97%	7.4	459.2
866	C27H29CIN4OS		CI	98%	7.9	493.2
867	C27H28Cl2N4OS			97%	8.4	527.1
868	C28H32N4OS			98%	7.6	473.2
869	C27H29FN4OS			96%	7.6	477.2
870	C28H32N4OS			94%	7.7	473.2
871	C28H31CIN4OS			96%	ช.3	507.2
872	C30H36N4O3S		0	94%	7.2	533.2
873	C29H34N4OS			91%	7.9	487.2
874	C25H28N4O2S			95%	6.9	449.2
875	C25H32N4O2S			38+8%	6.9+7.04	453.2

<u></u>		E T	Z-R	·		
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
876	C26H35N5O2S			94%	5.0	482.2
877	C27H37N5O2S			93%	5.0	496.3
878	C27H39N5OS			94%	5.2	482.3
879	C23H30N4O2S		0	95%	6.5	427.2
880	C24H32N4O2S		0	97%	6.7	441.2

			·		Analyses	
		R1 S	272			
Ex. No	. Formula	R1	R2	Purity	rt (min)	[M+H]+
881	C29H27CIN4OS		i ci	78%	7.7	515.2
882	C29H28N4OS			59%	7.2	481.2
883	C31H32N4OS		CF ₃	63%	8.6	617.2
884	C31H30N4O2S			61%	7.1	523.2
885	C32H34N4OS			60%	7.9	523.3
886	C31H33N5OS			28%	6.7	524.2
887	C29H27N5O3S		, o o	53%	7.6	526.2
888	C29H27BrN4OS		ar are	68%	7.8	559.1
889	C29H26F2N4OS		F	62%	7.3	517.2
890	C29H27N7OS		, . (64%	7.6	522.2
891	C30H27N5OS		2	66%	7.3	506.2
892	C30H28N4O3S			62%	7.1	525.2
893	C29H26CIN5O3S		200	55%	7.9	560.1
894	C33H36N4OS			59%	8.1	537.3
895	C30H30N4OS		OCF,	67%	7.9	565.2

R1 Z	Z-R
R1	R2

Ex. No	. Formula		R2	<u> </u>		
	- Comula	R1	R2	Purity	rt (min)	[M+H]+
896	C31H32N4OS			57%	7.7	509.2
897	C28H24CIN5O2S		c:	64%	6.2	530.1
898	C28H25N5O2S			64%	5.6	496.2
899	C30H29N5O2S		CF ₃ CF ₃	52%	7.1	632.2
900	C30H27N5O3S			57%	5.5	538.2
901	C31H31N5O2S			65%	6.4	538.2
902	C30H30N6O2S			29%	5.0	539.2
903	C28H24N6O4S		20,	51%	6.0	541.2
904	C28H24BrN5O2S			72%	6.3	574.0
905	C28H23F2N5O2S		F	66%	5.7	532.2
906	C28H24N8O2S			52%	6.1	537.2
907	C29H24N6O2S		200	65%	5.7	521.1
908	C29H25N5O4S			66%	5.5	540.1
909	C28H23CIN6O4S		Z 0 2	55%	6.4	575.1
910	C32H33N5O2S			64%	6.6	552.2

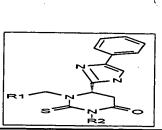
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Ex. No	. Formula	R1	R2	Purity	rt (min)	[M+H]+
911	C29H27N5O2S		OCF,	68%	6.5	580.1
912	C30H29N5O2S			68%	6.1	524.2
913	C26H20CIN5O3S	NO3	Ci	60%	7.0	518.1
914	C26H21N5O3S	NO2		63%	6.6	484.2
915	C28H25N5O3S	20,	CF ₃	41%	7.8	620.1
916	C28H23N5O4S	20,		51%	6.4	526.1
917	C29H27N5O3S	, no.		64%	7.3	526.2
918	C28H26N6O3S	NO.3		21%	6.2	527.2
919	C26H20N6O5S	20,	0.0	27%	6.8	529.1
920	C26H20BrN5O3S	20,		61%	7.2	562.0
921	C26H19F2N5O3S	20,	F	55%	6.6	520.1
922	C26H20N8O3S	20,	(61%	7.0	525.1
923	C27H20N6O3S	NO ₂	2	50%	6.6	509.1
924	C27H21N5O5S	, NO,		68%	6.5	528.1
925	C26H19CIN6O5S	NO,	NO3	44%	7.2	563.1

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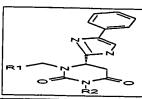
				R2			
•	Ex. No	. Formula	R1	R2	Purity	rt (min)	[M+H]+
	926	C30H29N5O3S	NOz		60%	7.5	540.2
	927	C27H23N5O3S	20,	OCF.	62%	7.3	568.1
	928	C28H25N5O3S	20,		60%	7.0	512.2
	929	C23H18CIN5OS2		Ci	28%	6.4	480.1
	930	C23H19N5OS2	(s)		22%	5.8	446.1
	931	C25H23N5OS2	√ _s ×	CF, CF,	34%	7.3 _.	582.1
	932	C25H21N5O2S2	T _s		25%	5.7	488.1
	933	C26H25N5OS2			21%	6.6	488.1
	934	C25H24N6OS2	√ _s ×		13%	5.3	489.1
	935	C23H18N6O3S2	√ _s ×	10,	23%	6.2	491.1
	936	C23H18BrN5OS2	√ s		38%	6.5	524.0
	937	C23H17F2N5OS2		F	58%	5.8	482.1
	938	C23H18N8OS2		2-2-0	28%	6.3	487.1
	939	C24H18N6OS2		o z	32%	5.9	471.1
	940	C24H19N5O3S2	√ _s ×		23%	5.7	490.1



Ex. No.	Formula	. B4	R2	 		
EX. NO.	Pomida	R1	R2	Purity	rt (min)	[M+H]+
941	C23H17CIN6O3S2	(s)	203	33%	6.7	525.0
942	C27H27N5OS2	√s ×		29%	6.8	502.2
943	C24H21N5OS2	N _s	JOF a	35%	6.7	530.1
944	C25H23N5OS2	√s N		16%	6.3	474.1
945	C26H27CIN4OS		C.	61%	7.5	479.2
946	C26H28N4OS			54%	7.0	445.2
947	C28H32N4OS		CF, CF,	61%	8.4	581,1
948	C28H30N4O2S			49%	6.9	487.2
949	C29H34N4OS			57%	7.7	487.2
950	C28H33N5OS			16%	6.4	488.2
951	C26H27N5O3S		, O.	44%	7.4	490.2
952	C26H27BrN4OS			70%	7.6	523.1
953	C26H26F2N4OS		F	61%	7.0	481.2
954	C26H27N7OS		2-0	66%	7.4	486.2
955	C27H27N5OS		2	68%	7.1	470.2

		R1 2				
Ex. No	Formula	R1	R2	Purity	rt (min)	[M+H]+
956	C27H28N4O3S			63%	6.9	489.2
957	C26H26CIN5O3S		NO2	66%	7.7	524.1
958	C30H36N4OS			58%	7.9	501.3
959	C27H30N4OS	Î	OCF,	64%	7.7	529.2
960	C28H32N4OS			46%	7.5	473.2

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O Z-R						
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
961	C30H30N4O3			57%	10.5	495.2
962	C30H27F3N4O2		L L	69%	11.6	533.2
963	C29H28N4O2			69%	10.4	465.2
964	C29H27N5O4		, NO.	61%	11.0	510.2
965	C30H29CIN4O2			74%	11.6	513.2
966	C32H32N4O4			52%	11.0	537.2
967	C29H27BrN4O2			76%	11.2	543.1
968	C29H27FN4O2		, F	60%	10.7	483.2
969	C29H26Cl2N4O2		C C	68%	11.9	533.1
970	C31H30N4O3			71%	10.3	507.2
971	C30H30N4O2S			72%	10.9	511.2
972	C30H27F3N4O3			77%	11.6	549.2
973	C29H27BrN4O2	皇	Br	66%	11.3	543.1
974	C32H34N4O2			85%	11.5	507.3
975	C29H26F2N4O2		F	72%	10.8	501.2

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Fu No.						
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
976	C32H34N4O5			71%	10.3	555.2
977	C29H27N5O4			72%	8.0	510.2
978	C29H24F3N5O3		F F F	70%	9.3	548.2
979	C28H25N5O3			79%	7.8	480.2
980	C28H24N6O5		NO ₂	62%	8.6	525.2
981	C29H26CIN5O3		Ū,	71%	9.1	528.2
982	C31H29N5O5			65%	8.6	552.2
983	C28H24BrN5O3			82%	8.8	558.1
984	C28H24FN5O3		A F	73%	8.2	498.2
985	C28H23CI2N5O3		C C	66%	9.5	548.1
986	C30H27N5O4			81%	7.7	522.2
987	C29H27N5O3S			79%	8.4	526.2
988	C29H24F3N5O4			83%	9.3	564.2
989	C28H24BrN5O3		÷.	69%	8.8	558.1
990	C31H31N5O3			84%	9.2	522.3

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Ev No.						
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
991	C28H23F2N5O3		F	86%	8.1	516.2
992	C31H31N5O6			60%	7.7	570.2
993	C27H23N5O5	NO ₃		76%	9.5	498.2
994	C27H20F3N5O4	NO ₃		71%	10.7	536.1
995	C26H21N5O4	20,		85%	9.4	468.2
996	C26H20N6O6	200	NO ₂	56%	10.0	513.2
997	C27H22CIN5O4	0,00	ō	77%	10.7	516.1
998	C29H25N5O6	20,0		64%	10.2	540.2
999	C26H20BrN5O4	NO2		83%	10.4	546.0
1000	C26H20FN5O4	20,	A F	74%	9.8	486.2
1001	C26H19CI2N5O4	20,	0	69%	11.0	536.1
1002	C28H23N5O5	20,		81%	9.3	510.2
1003	C27H23N5O4S	Z0°		79%	10.1	514.1
1004	C27H20F3N5O5	20,		74%	10.8	552.1
1005	C26H20BrN5Q4	20,	Br	66%	10.4	546.0

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Ex. No	. Formula	R1	R2	Purity	rt (min)	[M+H]+
1006	C29H27N5O4	NO3		84%	.10.8	510.2
1007	C26H19F2N5O4	NO ₂	F	76%	9.8	504.1
1008	C29H27N5O7	20%		74%	9.3	558.2
1009	C24H21N5O3S	\(\sigma_s\)	i o	60%	8.2	460.1
1010	C24H18F3N5O2S	√s ×		65%	9.5	498.1
1011	C23H19N5O2S	√s ×		77%	8.0	430.1
1012	C23H18N6O4S	√s ×	NO ₂	60%	8.7	475.1
1013	C24H20CIN5O2S	\[\langle s \]	ei ei	62%	9.4	478.1
1014	C26H23N5O4S	√ _s N		63%	8.9	502.2
1015	C23H18BrN5O2S	√ _s N		79%	9.1	508.0
1016	C23H18FN5O2S	√ _s N		63%	8.4	448.1
1017	C23H17Cl2N5O2S	√s N	E. e.	54%	9.8	498.1
1018	C25H21N5O3S			82%	8.0	472.1
1019	C24H21N5O2S2			73%	8.8	476.1
1020	C24H18F3N5O3S		4	70%	9.6	514.1

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				R2	l		
	Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
	1021	C23H18BrN5O2S	[s	A Br	60%	9.2	508.0
	1022	C26H25N5O2S	√s N		74%	9.6	472.2
	1023	C23H17F2N5O2S	Z _s	F	62%	8.3	466.1
	1024	C26H25N5O5S	\(\sigma_s\)		64%	8.0	520.1
	1025	C27H22F2N4O3	F		76%	9.4	489.2
	1026	C27H19F5N4O2	F	F F	77%	10.6	527.1
·	1027	C26H20F2N4O2	F		87%	9.2	459.2
	1028	C26H19F2N5O4	F	2000	79%	9.9	504.1
	1029	C27H21ClF2N4O2	F	ō	74%	10.6	507.1
	1030	C29H24F2N4O4	F		59%	10.1	531.2
	1031	C26H19BrF2N4O2	F		82%	10.3	537.1
	1032	C26H19F3N4O2	F	F	79%	9.7	477.1
	1033	C26H18Cl2F2N4O2	F		69%	11.0	527.1
	1034	C28H22F2N4O3	F		82%	9.2	501.2
	1035	C27H22F2N4O2S			76%	9.9	505.1

		R1 0	22.0			
Ex. No.	Formula	R1	R2	Purity	rt (min)	[M+H]+
1036	C27H19F5N4O3	F		83%	10.7	543.1
1037	C26H19BrF2N4O2	F	Br	68%	10.4	537.1
1038	C29H26F2N4O2	F		86%	10.7	501.2
1039	C26H18F4N4O2	F	F	80%	9.6	495.1
1040	C29H26F2N4O5	F		43%	9.2	549.2

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Analyses	

Ex. No.	Formula	R'3	R4	Purity	rt (min)	[M+H]+
1041	C26 H33 N5 O S2		H ₃ C-N CH ₃	56	3.69	496.3
1042	C29 H37 N5 O2 S	О СН3	H ₃ C-N	74	3.78	520.3
1043	C30 H36 N6 O S		H ₃ C-N	76	3.77	529.3
1044	C31 H38 N6 O S		H,C-N CH,	73	3.85	543.3
1045	C30 H39 N5 O S	H ₃ C .	H,C-N CH,	63	4.19	518.3
1046	C30 H36 N6 O S	Ţ,	H,C-N CH,	71	4.01	529.3

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Ex. No.	Formula	R'3	R4	Purity	rt (min)	[M+H]+
1047	C27 H35 N5 O S2	s	H,C-N CH,	69	3.65	510.3
1048	C30 H39 N5 O2 S	O_CH ₃	H,C-N CH,	75	3.75	534.3
1049	C31 H42 N6 O S		H,C-N CH,	71	3.49	547.3
1050	C31 H38 N6 O S		H,C-N CH,	66	3.74	543.3
1051	C31 H38 N6 O S	·	H ₃ C-N CH ₃	87	3.89	543.3

Analyses

		R:3	2 Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z	?			
Ex. No.	Formula	R'3	R4	┵	Purity	rt (min	(M+H)
1052	C30 H36 N6 O S		N	<u></u>	83.38		529.3
1053	C26 H33 N5 O S2	S.	N	<u>\</u>	72.31	4.41	496.3
1054	C29 H37 N5 O2 S	H ₃ C O	N		71.47	4.5	520.3
1055	C30 H40 N6 O S	2	N N	•	62.38	3.86	533.3
1056	C25 H32 N6 O S2	N S	N	\.\.\!	25.6	3.9	497.2
1057	C28 H33 F2 N5 O S	L.	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		63.2	4.5	526.3
1058	C31 H41 N5 O S	H,C CH,	N -	:	69.01	5.17	532.4
1059	C28 H34 N6 O3 S) - 10 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	N	:	73.01	4.58	535.3
1060	C28 H41 N5 O S		N		44.6	4.9	496.4
1061	C29 H34 F3 N5 O2 S	F CO	N	\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.	80.9	5.1	574.2
1062	C30 H39 N5 O S	H ₃ C	N N		58.64	4.91	518.3
1063	C36 H42 N6 O S	H ₃ C .	_N		54.23	5.3	607.3
1064	C28 H34 Br N5 O S	Br			76.51	4.86	568.2
1065	C28 H33 CI2 N5 O S	CI	N		74.91	5.03	558.2
1066	C29 H34 F3 N5 O S	FF	N		66.26	4.93	558.2
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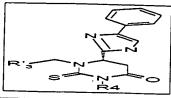
Ex. No.	Formula	T	R4		Ĺ		
	Formula	R'3	R4		Purity	rt (min)	[M+H]+
1067	C28 H34 N6 O3 S	0,1,2	N N	`:	40	4.6	535.2
1068	C32 H37 N5 O S		N .	,	73.1	4.9	540.3
1069	C29 H34 N6 O5 S		N		55.8	4.58	579.2
1070	C34 H39 N5 O S				64.6	5.2	566.3
1071	C29 H34 N6 O S			:	70.75	4.38	515.3
1072	C29 H37 N5 O S	H ₃ C	N		64.36	4.68	504.3
1073	C35 H41 N5 O2 S	100	N .		40.5	5	596.3
1074	C31 H38 N6 O S	H ₂ C			80.4	4	543.3

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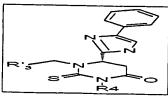
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R4		1				
Ex. No.	Formula	R'3	R4	Purity	rt (min)	[M+H]+
1075	C26H32N6O3S2	(s)	, N O Y	45.2%	6.1	541.3
1076	C27H34N6O3S2	(s)	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	35.3%	6.3	555.3
1077	C28H36N6O3S2			39.9%	6.5	569.3
1078	C30H38N6O3S2	(s)	; , , , , , , , , , , , , , , , , , , ,	14.9+22.82%	6,7+6,76	595.3
1079	C32H41N5O3S		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	70.3%	7.5	576.4
1080	C33H43N5O3S		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	71.9%	7.7	590.4
1081	C34H45N5O3S		·	72.7%	7.9	604.4
1082	C36H47N5O3S			34.6+34.7%	8.1+8.28	630.4
1083`	C29H33F2N5O3S	F	· ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	60.6%	6.9	570.3
1084	C30H35F2N5O3S	F	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	62.7%	7.1	584.3
1085	C31H37F2N5O3S	F		65.5%	7.3	598.3
1086	C33H39F2N5O3S	F .	, o	33.92%+32.4%	7.5+4.6	624.3
1087	C29H34BrN5O3S	Br		65.6%	7.3	612.2
1088	C30H36BrN5O3S	Br	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	68.6%	7.5	626.2
1089	C31H38BrN5O3S	Br	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	75.2%	7.7	640.3

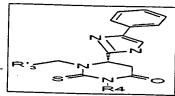
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Ex. No.	Formula	R'3 P4		<u> </u>		
		7.3	R4	Purity	rt (min	[M+H]+
1090	C33H40BrN5O3S	Br		37.14%+37.1%	7.88+8.0	666.3
1091	C29H34BrN5O3S	Br		71.9%	7.3	612.2
1092	C30H36BrN5O3S	Br	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	76.2%	7.4	626.2
1093	C31H38BrN5O3S	Br	[,~~,ho+	77.0%	7.6	640.3
1094	C33H40BrN5O3S	Br		39.4+39.64%m	7.8+8.0	666.3
1095	C29H33CI2N5O3S	CI	, NO +	72.1%	7.6	602.2
1096	C30H35CI2N5O3S	Ci Ci	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	74.9%	7.7	616.3
1097	C31H37Cl2N5O3S	CI		76.4%	7.9	630.3
1098	C33H39CI2N5O3S		0 0 0	39.6%+39.16%	8.1+8.4	656.3
1099	C30H34F3N5O3S	F.F.	·	64.3%	7.3	602.3
1100	C31H36F3N5O3S		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	71.3%	7.5	616.3
1101	C32H38F3N5O3S			71.6%	7.6	630.3
1102	C34H40F3N5O3S			34.8+34.91%	8.0+7.8	656.4
1103	C29H34N6O5S	NON		63.2%	6.9	579.3
1104	С30H36N6O5S	NO ₂	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	66.1%	7.1	593.3

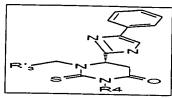


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Ex. No.	Formula	R'3	R4	Purity	rt (min)	[M+H]+
1105	C31H38N6O5S	NO ₂	; ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	66.1%	7.3	607.3
1106	C33H40N6O5S	NO ₂	, N 0 0	33.7%+24.4%	7.5+7.6	633.4
1107	C33H37N5O3S		, N 10+	84.0%	7.2	584.4
1108	C34H39N5O3S		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	86.3%	7.4	598.4
1109	C35H41N5O3S		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	86.2%	7.6	612.4
1110	C37H43N5O3S			43.1%+43.4%	7.9+8.12	638.4
1111	C36H41N5O4S		· ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	58.2%	7.3	640.4
1112	C37H43N5O4S		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	61.1%	7.5	654.4
1113	C38H45N5O4S		; ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	67.6%	7.7	668.4
1114	C40H47N5O4S			38.1%+38.5%	7.9+8.1	694.4
1115	C21H24N6OS2	(s)	* N	74.0%	3.9	441.2
1116	C22H26N6OS2	(s)	N N	80.2%	4.0	455.3
1117	C23H28N6OS2	(s)	× × ×	47.3%	4.2	469.3
1118	C25H30N6OS2	(s)	, , , , , , , , , , , , , , , , , , ,	18.31%+14%	4.2+4.3	495.3
1119	C27H33N5OS		* N	76.8%	5.1	476.4



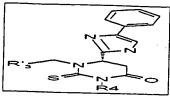
Ex. No.	Earnest a		_L			
	Formula	R'3	R4	Purity	rt (min)	[M+H]+
1120	C28H35N5OS		N	77.9%	5.3	490.4
1121	C29H37N5OS		Å N	75.6%	5.4	504.4
1122	C31H39N5OS		, N	38.42%+26.7%m	5.5+5.7	530.4
1123	C24H25F2N5OS	F	Δ N	68.1%	4.5	470.3
1124	C25H27F2N5OS	F	N	66.9%	4.7	484.3
1125	C26H29F2N5OS	L.	Å N	70.0%	4.8	498.3
1126	C28H31F2N5OS		2	25.0%	4.9	524.3
1127	C24H26BrN5OS	Br	Å N	72.7%	4.9	512.2
1128	C25H28BrN5OS	Br	N N	78.5%	5.0	526.2
1129	C26H30BrN5OS	Br	Å N	80.2%	5.1	540.2
1130	C28H32BrN5OS	Br	Z	39.21%+27%	5.3+5.4	566.2
1131	C24H26BrN5OS	Br	* A N	77.9%	4.9	512.2
1132	C25H28BrN5OS	Br	N	81.4%	5.0	526.2
1133	C26H30BrN5OS	Br	* A	78.25%*	5.1	540.2
1134	C28H32BrN5OS		2	31.02%+27.9	5.2+5.4	566.2

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Ex. No.	Formula	R'3 R4		B72	1	1 200
1135	C24H25Cl2N5OS	Ci T	* A N	Purity 79.9%	rt (min) 5.1	[M+H]+ 502.2
1136	C25H27CI2N5OS	CI	N N	81.2%	5.2	516.2
1137	C26H29Cl2N5OS	Oi Oi	, N	80.1%	5.3	530.2
1138	C28H31Cl2N5OS	CI	, N	33.63%+28.8%	5.4+5.6	556.2
1139	C25H26F3N5OS	F	Å N	73.7%	4.9	502.3
1140	C26H28F3N5OS		N. N.	80.8%	5.1	516.2
1141	C27H30F3N5OS			76.86%*	5.2	530.3
1142	C29H32F3N5OS	F F	, , , , , , , , , , , , , , , , , , ,	27.7%+27.3	5.3+5.4	556.3
1143	C24H26N6O3S	NO ₂	Å N	70.7%	4.6	479.3
1144	C25H28N6O3S	NO ₂	N	72.3%	4.7	493.3
1145	C26H30N6O3S	NO ₂	N N	72.4%	4.8	507.3
1146	C28H32N6O3S	NO	, m Z	27.5%+26.5%	4.9+5.3	533.3
1147	C28H29N5OS		Ž N	88.2%	4.8	484.3
1148	C29H31N5OS		N	89.1%	5.0	498.3
1149	C30H33N5OS		, N	89.9%	5.1	512.3

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Ex. No.	Formula	R'3 R4		D. sia	1 - 4 - 1 - 1	
1150	C32H35N5OS		in N	Purity 46.67%+31.0	rt (min) 5.3+5.5	[M+H]+ 538.3
1151	C31H33N5O2S		* N	46.0%	5.0	540.3
1152	C32H35N5O2S		N N	46.6%	5.1	554.2
1153	C33H37N5O2S		·	54.2%	5.2	568.3
1154	C35H39N5O2S		· N	28+21%	5.3+5.5	594.3

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Ex. No.	Formula	R'3	R4	Purity	rt (min	[M+H]+
1155	C29H34N6O5S	202	, N O Y	82%	6.5	579.3
1156	C30H36N6O5S	200	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	85%	6.7	593.3
1157	C31H38N6O5S			84%	6.9	607.4
1158	C33H40N6O5S	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		42+42%	7.1+7.28	633.4
1159	C30H34N6O7S	200	, N 0 +	78%	6.5	623.3
1160	C30H36N6O7S	20,	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	82%	6.7	637.3
1161	C32H38N6O7S	202	, N Y O Y	80%	6.9	651.3
1162	C34H40N5O7S	202	; , , , , , , , , , , , , , , , , , , ,	34+41%	7.1+7.2	677.4
1163	C35H39N5O3S		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	83%	7.1	610.4
1164	C36H41N5O3S		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	84%	7.3	624.4
1165	C37H43N5O3S		, ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	85%	7.5	638.4
1166	C39H45N5O3S			41+42%	7.7+7.9	664.4
1167	C33H37N5O3S		* ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	91%	6.9	584.4
1168	C34H39N5O3S		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	90%	7.1	598.4
1169	C35H41N5O3S		,	89%	7.3	612.4

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E. 11.		<u> </u>		R4		1			
Ex. No	o. Formula	R'3		R4		Purity	rt (mir) [M+H]	j+
1170	C37H43N5O3S		>	-	, , , , , , , , , , , , , , , , , , ,	41+42%	7.5+7.	7 638.4	
1171	C30H34N6O3S	NC) <u> </u>	, , , , , , , , , , , , , , , , , , ,	,°+	85%	6.4	559.3	
1172	C31H36N6O3S	NC)	N	Y°Y	87%	6.5	573.3	
1173	C32H38N6O3S	NC)	, N	r°+	81%	6.8	587.4	
1174	C34H40N6O3S	ZC)) \ \ \ \	42+43%	6.9+7.1	613.4	
1175	C37H43N5O5S			, , , , , , , , , , , , , , , , , , ,	.04	86%	6.9	670.4	
1176	C38H45N5O5S	5		`N	-04	82%	7.1	684.5	
1177	C39H47N5O5S			, , , , ,	04	86%	7.3	698.5	1
1178	C41H49N5O5S					38.3+38.4%	7.5+7.62	724.4	1
1179	C31H39N5O3S			, N	4	86%	6.9	562.4	
1180	C32H41N5O3S			`	10.	87%	7.1	576.4	
1181	C33H43N5O3S			, , , ,	·\	86%	7.3	590.4	
1182	C35H45N5O3S				*0	38+39%	7.5+7.64	616.4	
1183	C37H42N6O3S			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	4	85%	7.2	651.4	
1184	C38H44N6O3S			,	4	88%	7.3	665.4	

	NIN N
R'5	_N_
	N 0

	1		Ř4			
Ex. No.	Formula	R'3	R4	Purity	rt (min)	[M+H]+
1185	C39H46N6O3S			88%	7.5	679.4
1186	C41H48N6O3S		, de la companya de l	38.4+38.5%	7.8+7.98	705.4
1187	C36H39N5O3S		, ~, ~, ~, ~, ~, ~, ~, ~, ~, ~, ~, ~, ~,	86%	7.2	622.4
1188	C37H41N5O3S		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	87%	7.4	636.4
1189	C38H43N5O3S			82%	7.6	650.4
1190	C40H45N5O3S			40.6+40.9%	7.8+8.01	676.4
1191	C31H36N6O3S		· ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	85.41%°	6.6	573.3
1192	C32H38N6O3S		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	89%	6.8	587.4
1193	C33H40N6O3S		[*~~, ~, ~, ~, ~, ~, ~, ~, ~, ~, ~, ~, ~,	90%	7.0	601.4
1194	C35H42N6O3S			43.1+44.5%	7.3+7.45	627.4
1195	C24H26N6O3S		, N O Y	87%	4.3	479.3
1196	C25H2BN6O3S		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	92%	4.4	493.3
1197	C26H30N6O3S	200		92%	4.6	507.3
1198	C28H32N6O3S			35+33.9%	4.7+4.8	533.3
1199	C25H26N6O5S	NO,	Ž Z	82%	4.3	523.2

	NIN N
R's	N N
<u></u>	R4_

Ex. No	Formula	R':	<u></u>	R4				
1200	C26H28N6O5	Ţ.	_ NO ₃	R4	Purity 86%	rt (min	537.3	_
1201	C27H30N6O5S		NO3		N 83%	4.6	551.3	
1202	C29H32N6O5S		. ZO.,	A more	35+33.99	4.7+4.8	577.3	
1203	C30H31N5OS			A N	88%	4.9	510.3	
1204	C31H33N5OS			N. N.	90%	5.0	524.3	
1205	C32H35N5OS				89%	5.2	538.3	
1206	C34H37N5OS			, m	43+31%	5.3+5.4	564.3	
1207	C28H29N5OS		>-	Å N	92%	4.7	484.3	
1208	C29H31N5OS		>	N	93%	4.8	498.3	
1209	C30H33N5OS		>-	, N	92%	4.9	512.3	
1210	C32H35N5OS		> -	, N	43+30.1%	5.1	538.3	
1211	C25H26N6OS	NO NO)	* A N	87%	4.1	459.3	
1212	C26H28N6OS	NC NC]	N N	86%	4.2	473.3	
1213	C27H30N6OS	20		Å N	82%	4.4	487.3	
1214	C29H32N6OS	NC			40+36%	4.5+4.6	513.3	

Ex. No.	Formula	R'3	R4	Purity	1 -/	l marini
1215	C32H35N5O3S		Å N	87%	rt (min) 4.8	[M+H]+ 570.3
1216	C33H37N5O3S		N N	84%	4.9	584.3
1217	C34H39N5O3S		Å N	86%	5.0	598.3
1218	C36H41N5O3S		- N	32%+29%	5.2+5.3	624.4
1219	C26H31N5OS		Å N	90%	4.6	462.3
1220	C27H33N5OS		N	92%	4.7	476.4
1221	C28H35N5OS		, N	91%	4.9	490.4
1222	C30H37N5OS		, m N	42+29.9%	5.0+5.2	516.3
1223	C32H34N6OS		Å N	80%	5.0	551.3
1224	сззнземеоѕ		N	90%	5.1	565.3
1225	C34H38N6OS		, N	85%	5.3	579.4
1226	C36H40N6OS		, N	37%+27	5.45.6	605.4
1227	C31H31N5OS		, N	90%	5.0	522.3
1228	C32H33N5OS		N N	91%	5.1	536.3
1229	C33H35N5OS		, N	90%	5.2	550.3

	NIN N
R'5	77
	N 0 R4

Ex. No.	Formula	R'3	R4	Dit.		
1230	C35H37N5OS		in N	Purity 42%+30.8	rt (min) 5.4+5.5	[M+H]+ 576.3
1231	C26H28N6OS	2	* Z	68%	4.4	473.4
1232	C27H30N6OS	2	N N	56%	4.5	487.4
1233	C28H32N6OS	2 ;	, N	40%	4.7	613.2
1234	C30H34N6OS	2	A NOTE OF THE PROPERTY OF THE	40%	4.8	527.4

PHARMACOLOGICAL PROPERTIES OF THE COMPOUNDS OF THE INVENTION

The compounds of the present invention can and have been tested as regards their affinity for different sub-types of somatostatin receptors according to the procedures described below.

Study of the affinity for the sub-types of human somatostatin receptors:

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The affinity of a compound of the invention for sub-types of somatostatin receptors 1 to 5 (sst₁, sst₂, sst₃, sst₄ and sst₅, respectively) is determined by measurement of the inhibition of the bond of [¹²⁵I-Tyr¹¹]SRIF-14 to transfected CHO-K1 cells.

The gene of the sst₁ receptor of human somatostatin has been cloned in the form of a genomic fragment. A segment *Pst*I-XmnI of 1.5 Kb containing 100 bp of the non transcribed 5' region, 1.17 Kb of the coding region in totality, and 230 bp of the non transcribed 3' region is modified by the addition of the linker Bg1II. The resulting DNA fragment is subcloned in the *BamH*I site of a pCMV-81 in order to produce the expression plasmid in mammals (provided by Dr. Graeme Bell, Univ. Chicago). A cloned cell line expressing in a stable fashion the sst₁ receptor is obtained by transfection in CHO-K1 cells (ATCC) using the calcium phosphate co-precipitation method. The plasmid pRSV-neo (ATCC) is included as selection marker. Cloned cell lines were selected in an RPMI 1640 medium containing 0.5 mg/ml of G418 (Gibco), followed by circular cloning and multiplication in culture.

The gene of the sst₂ receptor of human somatostatin, isolated in the form of a genomic fragment of DNA of 1.7 Kb *BamHI-HindIII* and subcloned in a plasmid vector pGEM3Z (Promega), was provided by Dr. G. Bell (Univ. of Chicago). The expression vector of the mammalian cells is constructed by inserting the *BamH1-HindII* fragment of 1.7 Kb in endonuclease restriction sites compatible with the plasmid pCMV5. A cloned cell line is obtained by transfection in CHO-K1 cells using the calcium phosphate co-precipitation method. The plasmid pRSV-neo is included as selection marker.

The sst₃ receptor is isolated as a genomic fragment, and the complete coding sequence is contained in a *BamHI/HindIII* fragment of 2.4 Kb. The expression plasmid in mammals, pCMV-h3, is constructed by insertion of the *NcoI-HindIII* fragment of

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2.0 Kb in the EcoR1 site of the vector pCMV after modification of the terminations and addition of EcoR1 linkers. A cloned cell line expressing in a stable fashion the sst₃ receptor is obtained by transfection in CHO-K1 cells (ATCC) by the calcium phosphate co-precipitation method. The plasmid pRSV-neo (ATCC) is included as selection marker. Cloned cell lines were selected in an RPMI 1640 medium containing 0.5 mg/ml of G418 (Gibco), followed by circular cloning and multiplication in culture.

The expression plasmid of the human sst₄ receptor, pCMV-HX, was provided by Dr. Graeme Bell (Univ. Chicago). This vector contains the genomic fragment coding for the human sst₄ receptor of 1.4 Kb *NheI-NheI*, 456 pb of the non transcribed 5' region, and 200 pb of the non transcribed 3' region, cloned in the *XbaI/EcoR1* sites of PCMV-HX. A cloned cell line expressing in a stable fashion the sst₄ receptor is obtained by transfection in CHO-K1 cells (ATCC) by the calcium phosphate co-precipitation method. The plasmid pRSV-neo (ATCC) is included as selection marker. The cloned cell lines were selected in an RPMI 1640 medium containing 0.5 mg/ml of G418 (Gibco), followed by circular cloning and multiplication in culture.

The gene corresponding to the human sst₅ receptor, obtained by the PCR method using a genomic clone as probe, was provided by Dr. Graeme Bell (Univ. Chicago). The resulting PCR fragment of 1.2 Kb contains 21 base pairs of the non transcribed 5' region, the coding region in totality, and 55 pb of the non transcribed 3' region. The clone is inserted in an EcoR1 site of the plasmid pBSSK(+). The insert is recovered in the form of a *Hind*III-*Xba*I fragment of 1.2 Kb for subcloning in an expression vector in mammals, pCVM5. A cloned cell line expressing in a stable fashion the sst₅ receptor is obtained by transfection in CHO-K1 cells (ATCC) by the calcium phosphate coprecipitation method. The plasmid pRSV-neo (ATCC) is included as selection marker. The cloned cell lines were selected in an RPMI 1640 medium containing 0.5 mg/ml of G418 (Gibco), followed by circular cloning and multiplication in culture.

The CHO-K1 cells which express in a stable fashion the human sst receptors are cultured in an RPMI 1640 medium containing 10% of foetal calf serum and 0.4 mg/ml of geneticin. The cells are collected with 0.5 mM EDTA and centrifuged at 500 g for approximately 5 minutes at approximately 4°C. The pellet is resuspended in Tris 50 mM at pH 7.4 and centrifuged twice at 500 g for approximately 5 minutes at approximately 4°C. The cells are lysed by sonication and centrifuged at 39000 g for approximately 10 minutes at 4°C. The pellet is resuspended in the same buffer and centrifuged at 50000 g for approximately 10 minutes at approximately 4°C and the membranes in the pellet obtained are stored at -80°C.

The competitive inhibition tests of the bond with [125 I-Tyr11] SRIF-14 are carried out in duplicate using 96-well polypropylene plates. The cell membranes (10 µg protein/well) are incubated with [125 III] SRIF-14 (0.05 nM) for approximately 60 min. at approximately 37 °C in a 50 mM HEPES buffer (pH 7.4) containing BSA 0.2 %, MgCl₂ 5 mM, Trasylol 200 KIU/ml, bacitricin 0.02 mg/ml, phenylmethylsulphonyl fluoride 0.02 mg/ml.

The bound [I-Tyr]SRIF-14 is separated from the free [I-Tyr]SRIF-14 by immediate filtration through GF/C glass fibre filter plates (Unifilter, Packard) pre-impregnated with 0.1 % of polyethylenimine (P.E.I.), using a Filtermate 196 (Packard). The filters are washed with 50 mM HEPES buffer at approximately 0-4 °C for approximately 4 seconds and their radioactivity is determined using a counter (Packard Top Count).

The specific bond is obtained by subtracting the non-specific bond (determined in the presence of $0.1~\mu\text{M}$ of SRIF-14) from the total bond. The data relative to the bond are analyzed by computer-aided non-linear regression analysis (MDL) and the values of the inhibition constants (Ki) are determined.

Determination of the agonist or antagonist character of a compound of the present invention is carried out using the test described below.

Functional test: Inhibition of production of intracellular cAMP:

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20 CHO-K1 cells expressing the sub-types of human somatostatin receptors (SRIF-14) are cultured in 24-well plates in an RPMI 1640 medium with 10% of foetal calf serum and 0.4 mg/ml of geneticin. The medium is changed the day preceding the experiment.

The cells at a rate of 10⁵ cells/well are washed twice with 0.5 ml of new RPMI medium comprising 0.2 % BSA completed by 0.5 mM of 3-isobutyl-1-methylxanthine (IBMX) and incubated for approximately 5 min at approximately 37 °C.

The production of cyclic AMP is stimulated by the addition of 1 mM of forskolin (FSK) for 15-30 minutes at approximately 37 °C.

The inhibitor effect of the somatostatin of an agonist compound is measured by the simultaneous addition of FSK (1 μ M), SRIF-14 (10 $^{-12}$ M to 10 $^{-6}$ M) and of the compound to be tested (10 $^{-10}$ M to 10 $^{-5}$ M).

The antagonist effect of a compound is measured by the simultaneous addition of FSK (1 μ M), SRIF-14 (1 to 10 nM) and of the compound to be tested (10 M to 10 M).

The reaction medium is eliminated and 200 ml of 0.1 N HCl are added. The quantity of cAMP is measured by a radioimmunological test (FlashPlate SMP001A kit, New England Nuclear).

Results:

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The tests carried out according to the protocols described above have demonstrated that the compounds of general formula (I) defined in the present Application have a good affinity for at least one of the sub-types of somatostatin receptors, the inhibition constant K_i being lower than micromolar for certain exemplified compounds, and in particular for the compounds shown in the Tables I and II below.

R'3	R'4	K _i
* N	(CH ₂) ₃ NH ₂ (CH ₂) ₄ NH ₂ (CH ₂) ₅ NH ₂ (CH ₂) ₆ NH ₂	< 1μM < 1μM < 1μM < 1μM
*	(CH ₂) ₃ NH ₂ (CH ₂) ₄ NH ₂ (CH ₂) ₅ NH ₂ (CH ₂) ₆ NH ₂	< 1µM < 1µM < 1µM < 1µM

TABLE I

R'3	DIA	Y
, 103	R'4	K
* N	(CH ₂) ₄ NH ₂ (CH ₂) ₅ NH ₂ (CH ₂) ₆ NH ₂ (CH ₂) ₆ NMe,	< 1μM < 1μM < 1μM
NO ₂	(CH ₂) ₅ NH ₂ (CH ₂) ₆ NH ₂ (CH ₂) ₆ NMe ₂	< 1μM < 1μM < 1μM
*	(CH ₂) ₅ NH ₂ (CH ₂) ₆ NH ₂ (CH ₂) ₆ NMe ₂	< 1μM < 1μM < 1μM
*	(CH ₂) ₅ NH ₂ (CH ₂) ₆ NH ₂ (CH ₂) ₆ NMe ₂	< 1μM < 1μM < 1μM
*	(CH ₂) ₅ NH ₂ (CH ₂) ₆ NH ₂ (CH ₂) ₆ NMe ₂	< 1μM < 1μM < 1μM
* CN	(CH ₂) ₆ NMe ₂	< 1µM

TABLE II